Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution Volume 1

Water Quality Summaries for Watersheds in Washington State

August 2004

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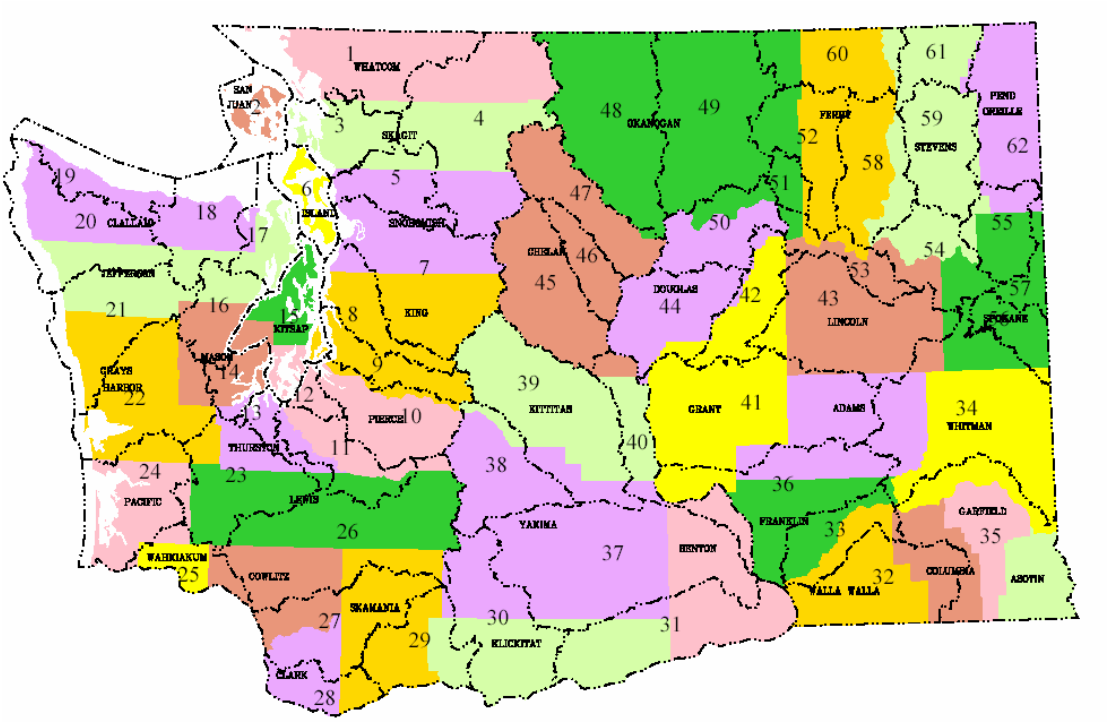

Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution Volume 1

Water Quality Summaries for Watersheds in Washington State

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Water Quality Program

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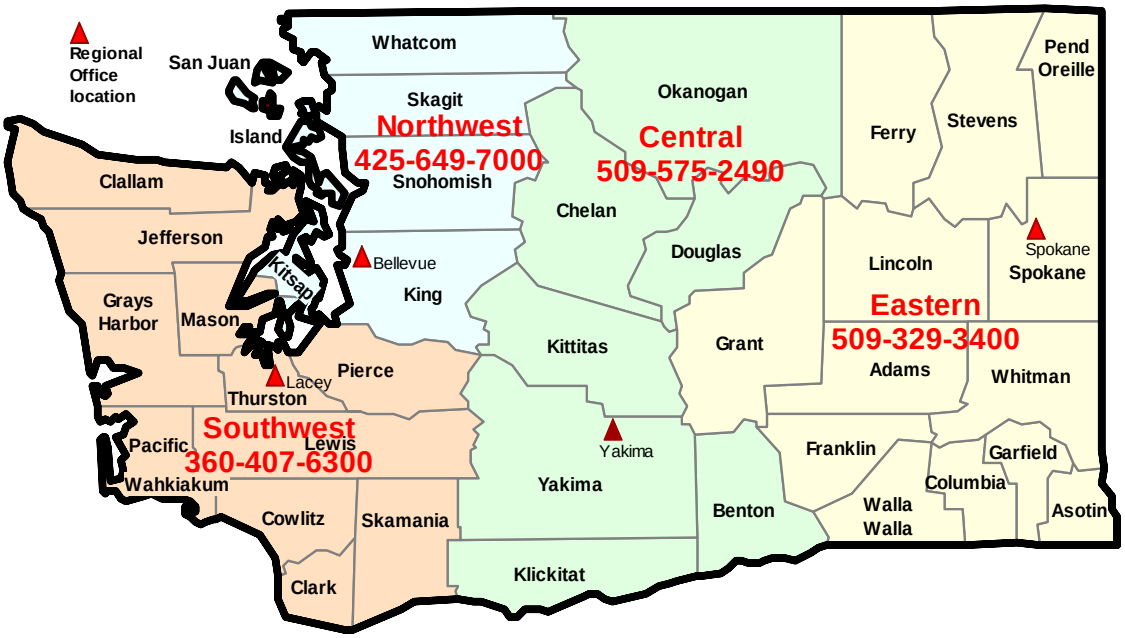

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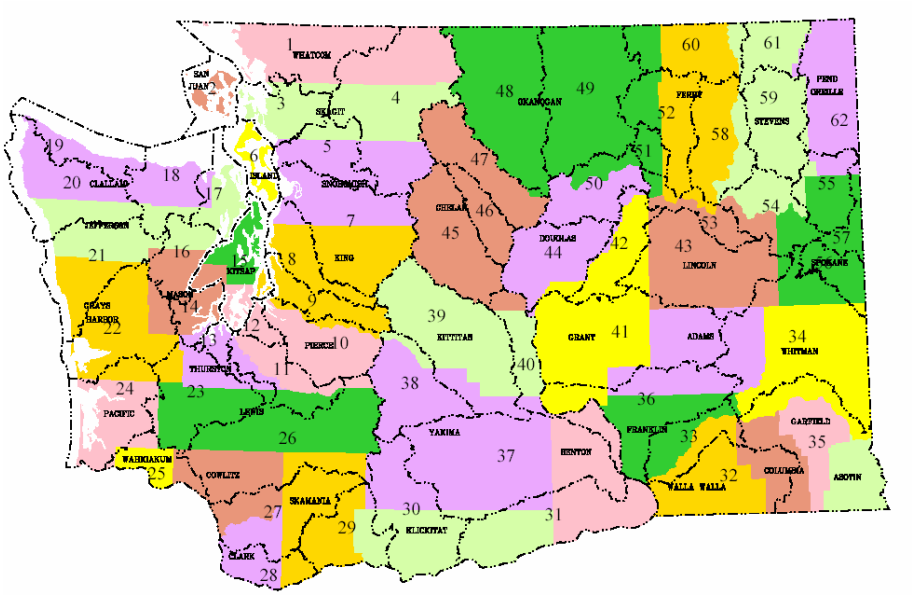

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Introduction

Washington's Water Quality Management Plan to Control Nonpoint Source Pollution is divided into three volumes:

- Volume 1 – Water Quality Summaries for Watersheds in Washington State
- Volume 2 – Water Quality Programs in Washington State
- Volume 3 – Management Strategies to Control Nonpoint Source Pollution in Washington State

Volume 1 provides a series of summaries that profile each major watershed in Washington State. The information contained in these watershed summaries can be used to better understand the relationships between demographics, land-use activities, and water quality problem areas. Data from the summaries can be used to help support watershed-based planning efforts. And, subsequently those local water quality plans that are incorporated into Volume 1 will be adopted by reference as part of Washington State's overall water quality plan.

Volume 2 identifies major programs that are used to help identify and control nonpoint source pollution.

Volume 3 lists the goals and objectives of the water quality plan, and the priority management strategies state agencies will be implementing for the next five years to address water quality problems.

The watersheds listed in Volume 1 are categorized according to Water Resource Inventory Areas (or WRIAs)[1]. In many instances, county boundaries may overlap the WRIA designations and vise versa; consequently, some WRIAs encompass more than one county and/or certain counties are located within more than one watershed. Each WRIA summary includes an introduction and three sections. The introduction describes the basin landscape characteristics, demographics and prevalent land-use patterns. Section 1 describes existing conditions, the 303(d) listed waterbodies and priority parameters that are slated for cleanup. Section 2 lists the known impacted designated uses (previously referred to as 'beneficial uses'). Section 3 describes those water quality plans and implementation efforts currently in place that help address the recommended priorities.

As additional data becomes available, Volume 1 will be periodically updated to provide sub-basin level details about the WRIAs. For possible updates, please see:

http://www.ecy.wa.gov/programs/wq/nonpoint/nps_plan.html#plan_vol1

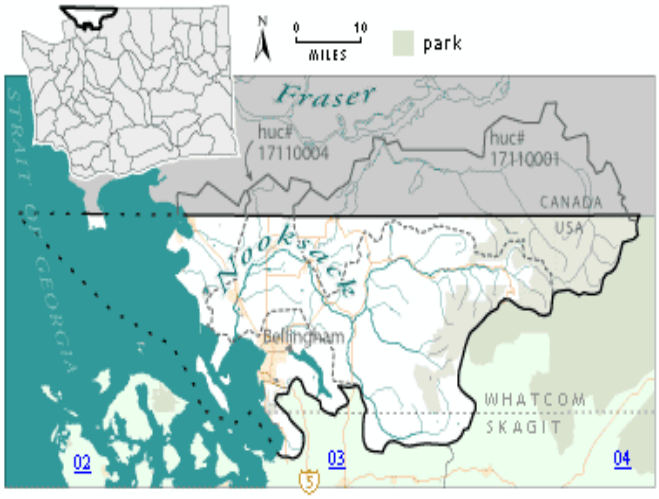
[1] Several federal programs refer to watersheds according to the eight digit Hydrological Unit Code (HUC). However, for purposes of this report, WRIA numbers are utilized, as it is the commonly accepted system for watershed planning in Washington State (RCW 90.82).

Key to Data Descriptions

The following key outlines the data sources and the applicability of the summary information to the watershed basins.

Name of Basin and Corresponding WRIA Number

Each watershed is mapped and listed according to the established basin name and WRIA number. There are currently sixty-two WRIAs in the state of Washington.



General landscape descriptions were derived mainly from *Ecoregions of the Pacific Northwest* (Omernik *et al.* 1998). When additional data were available, the unique characteristics of a WRIA were described beyond the general ecoregion narratives.

Counties

All counties located within the WRIA are listed and included on the map.

Primary Towns and Cities

Major communities, such as cities and unincorporated towns located within each WRIA, are listed.

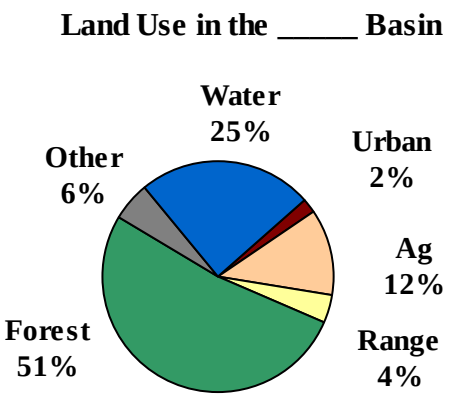
Tribal Reservation Lands

Only tribal reservation lands are listed and not "usual and accustomed areas"[2].

Special Purpose Districts

Local special districts are listed, including conservation, flood control and irrigation district(s).

[2] The term usual and accustomed areas (U&A) refers to the off-reservation areas in which treaty tribes reserved their aboriginal rights to fish or hunt. The U&A treaties involve 21 federally recognized tribes within the state and three tribes outside of the state.



The general type of known land-use activities[3] within the watershed is graphed according to the percentage of its occurrence. Information about Washington's land use GIS land cover data layer was obtained from the Multi-resolution Land Characterization Consortium (1999)[4].

Land Base

Land base is determined by ownership, including federal, state, local, tribal and private lands. Data is described in acres and percentages and was derived from the Public Lands Survey by Washington Department of Natural Resources (DNR). The sum of public lands subtracted from the calculated WRIA acreage yielded total private lands.

Principal Economic Activities (as total wages)

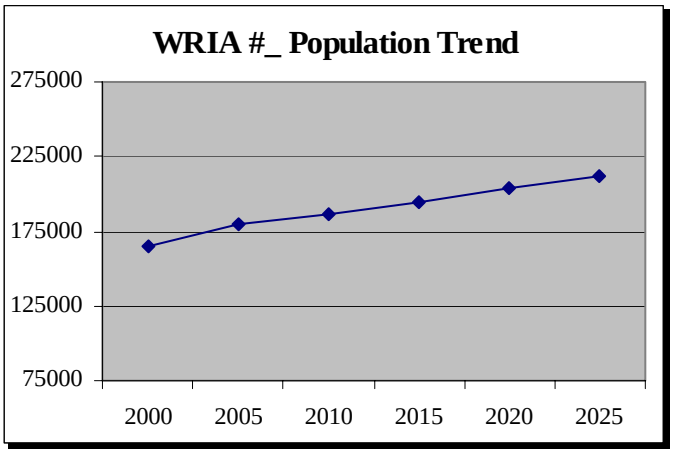
Projected wage sources were extrapolated to fit each WRIA. Often, wages earned did not correspond with the major land use. For example, in one particular WRIA, agriculture was listed as the major land-use activity; however, the majority of wages earned was from employment with the government sector. Economic activities were derived from wage figures of the Labor Market and Economic Analysis (LMEA) Program (1999) database.

[3] Category "other" may include perennial ice/snow, bare rock/sand/clay, quarries/strip mines/gravel pits, transitional, barren, and/or wetland areas.

[4] The Multi-Resolution Land Characterization Consortium project is a cooperative effort between the U.S. Geological Survey and the U.S. Environmental Protection Agency and is updated periodically.

Population

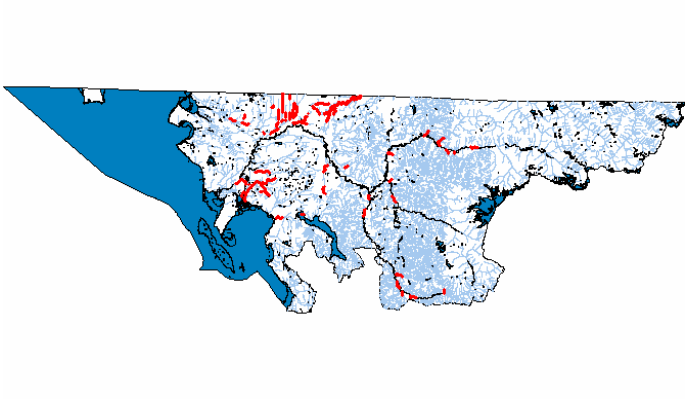
Population trend graphs reflect the combined projected population of those counties located within each watershed. Population values and growth trends were derived from the Office of Financial Management (1995) population projections.



Surface Water Quality

Each WRIA description includes a Water Quality Assessment Map that depicts the 303(d) listed problem areas (highlighted when viewed online).

Water Quality Assessment Map WRIA #__



For possible mapping updates, please see

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

Section 303(d) of the federal Clean Water Act requires each state to prepare a list of all its surface waters for which uses, including drinking, recreation and aquatic habitat, are impaired by pollutants. Waters placed on the 303(d) list require preparation of a Total Maximum Daily Load (TMDL) or water cleanup plan. Possible water pollutants can include fecal coliform, high temperature, low dissolved oxygen, acidic or basic pH, metals, pesticides, organics, and nutrients. TMDLs identify the maximum amount of a pollutant allowed to be released into a waterbody so as not to impair uses of the water. TMDLs within each WRIA are listed according to both the listed waterbody and the type of pollutant being targeted for cleanup. Current 303(d) data is from the 1998 EPA approved list. As further information becomes

available regarding impaired waters, changes will be reflected at the Washington State Water Quality Assessment website and subsequent editions of Volume 1. For updates, please see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

2. Impacted Designated Uses

Groundwater Quality

This section identifies pollutants detected in groundwater and springs that exceed the federal Safe Drinking Water Act standards. Standards are recognized as either "met" or "exceeded". Groundwater quality may be listed based on level of pollutants, including nitrates and pesticides. The data was queried from the Washington State Department of Health 2001 Drinking Water Database.

Sole Source Aquifer

Groundwater status may include data on whether a sole source aquifer is present within a WRIA.

Water Quantity

This section summarizes what is known about the quantity of water resources in each basin. Adequacy of water quantity is determined according to the relationship of required minimum flow levels and population trends. Water quantity levels are classified as follows: 1) baseline flow data is set but the adequacy of the flow level is not determined; 2) flows are not set but growth pressure is prevalent; 3) flows are set inadequately and need to be increased; 4) flows are not set and there is limited growth pressure; and 5) no data exists or there is no concern. Criteria for the relationship of flow standards and population levels are based on those used in the *Statewide Strategy to Recover Salmon – Extinction is Not an Option* (1999).

Salmonid Stock Status

Salmonid stock status data was obtained from the report *Statewide Strategy to Recover Salmon – Extinction Is Not an Option* (1999). Data also was derived from the Salmon and Steelhead Stock Inventory (SASSI) and the Endangered Species Act (ESA). Threatened basins are those that rank high in both healthy and unhealthy stocks. Impaired basins are those that rank high in unhealthy stocks and low in healthy stocks.

Air Quality (from windblown dust)

Water quality can be affected by air quality; for example, windblown dust from bare, dry agricultural lands, especially fallow fields, may be transported to waterways.

Public Health

Commercial Shellfish Growing Areas

Commercial shellfish harvesting areas are ranked by the Washington Department of Health as either 'approved', 'conditionally approved', 'restricted', or 'prohibited'. The amount of shoreline miles that fall into these categories are listed for each basin. These data do not include recreational shellfish harvest areas.

The following definitions are provided by the Washington State Department of Health. *Approved* - The sanitary survey shows that the area is not subject to contamination that presents an actual or potential public health hazard. An approved classification authorizes commercial shellfish harvest for direct marketing. *Conditionally Approved* - Meets approved criteria, but only during predictable periods. For example, during dry weather a growing area may meet approved water quality standards, but after a certain amount of rain falls (a 'rainfall event') the water quality declines. In this example, the

conditionally approved area is temporarily closed to harvest after a rainfall event. The length of closure is predetermined for each conditionally approved area, and is based on water sample data that shows the amount of time it takes for water quality to recover and again meet approved criteria. Once that time period has elapsed, the area is reopened. *Restricted* - Areas that do not meet water quality standards for an approved classification, but the sanitary survey indicates only a limited degree of pollution from non-human sources. Shellfish harvested from restricted growing areas cannot be marketed directly. They must be relayed to approved growing area waters for a specified amount of time, allowing shellfish to naturally cleanse themselves of contaminate before they are harvested for market.

Prohibited - The sanitary survey indicates that fecal material, pathogenic microorganisms, or poisonous or harmful substances may be present in concentrations that pose a health risk to shellfish consumers. Growing areas adjacent to sewage treatment plant outfalls, marinas, and other persistent or unpredictable pollution sources are classified as prohibited. Growing areas that have not undergone a sanitary survey are also classified as prohibited. Commercial shellfish harvests are not allowed from prohibited areas.

Domestic Water Supply
This entry identifies basins that contain sources for larger community water systems (CWS) where surface water and spring water represent a significant portion of the system's total capacity. The level of vulnerability that these surface water sources have to contamination and the potential impact on human health raise these basins to a status of important areas for protection, preservation, and/or pollution mitigation measures. Data were compiled from the Washington State Department of Health (DOH) 2002 SENTRY database. The data set that was used included all community water systems, as defined by the federal Safe Drinking Water Act, reporting total connections. Also included in this data set are those systems using surface water as permanent or seasonal sources (excluding emergency). Domestic water systems that met the criteria as described above are determined to "significantly utilize surface water sources." All other systems are determined to have "no significant use of surface water sources."

3. Water Quality Cleanup Plans and Implementation Efforts

Watershed Management Plans, Total Maximum Daily Loads (TMDLs), and other applicable water cleanup efforts that are being planned or implemented for each basin are listed. Most of this information came from directly contacting regional conservation districts, county and/or city public works, planning and health department(s) in Washington State via U.S. mail, email and telephone. About 75 percent of those contacted participated with a response.

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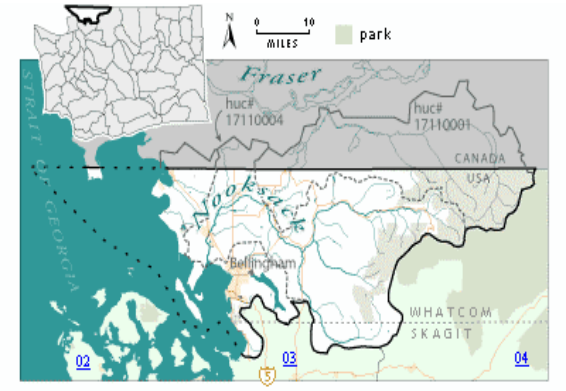
Nooksack Basin - WRIA #1



WRIA #1 encompasses about 1,039,111 acres, and includes more than 1,000 miles of rivers and streams. The eastern third is mountainous and heavily forested. The western portion consists mostly of a broad floodplain. Part of the Fraser lowlands, this WRIA has undulating glacial drift plains, terraces, and floodplains with low gradient meandering rivers and streams. Surface material is deep to moderately deep silt to sandy loam. Potential natural vegetation is western hemlock, western red cedar, and some red alder. Mean temperature ranges from 33/44° (winter) to 50/73° (summer).

Counties

Whatcom	(94%)
Skagit	(6%)

Primary Towns and Cities

Bellingham	Ferndale	Lynden
Everson	Sumas	Blaine

Tribal Reservation Lands

Lummi Tribe

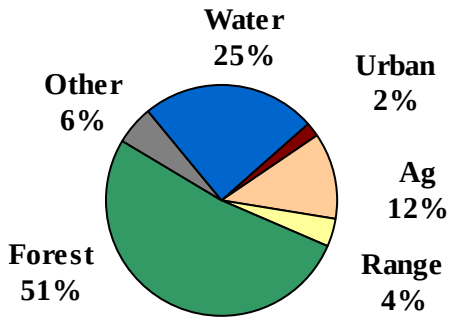
Nooksack Tribe

Special Purpose Districts

Whatcom Conservation District

Skagit Conservation District

Land Use in the Nooksack Basin



Land Base (in acres)

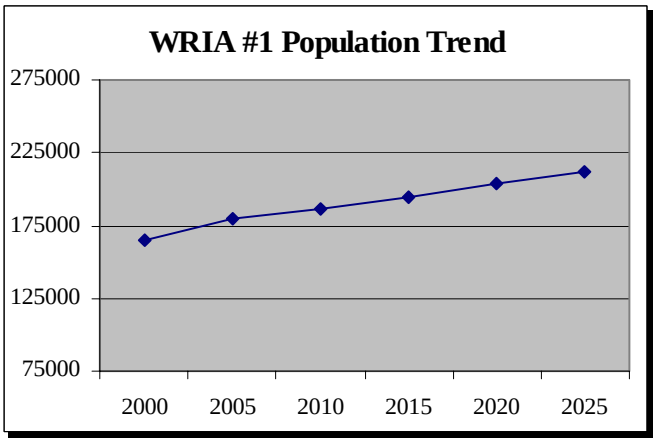
Federal	271,005	26.1%
State	109,219	10.5%
Local	3,457	0.3%
Tribal	12,395	1.2%
Private	643,035	61.9%

Principal Economic Activities (as total wages)

Agriculture/Forestry	4%
Manufacturing	15%
Retail Trade	22%
Services	25%
Government	15%

Population

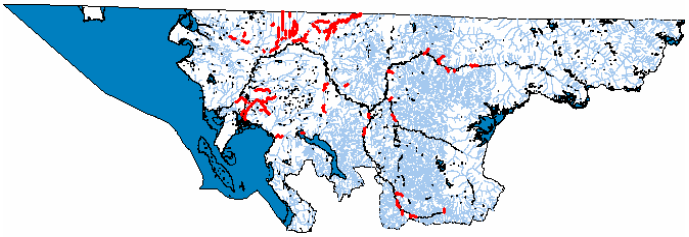
There are approximately 164,463 people living in the Nooksack River Basin. The primary population centers are Bellingham, Lynden and Ferndale. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #1

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Anderson Ditch, Bellingham Bay, Bender Road Ditch, Benson Road Ditch, Bertrand Creek, Clearbrook Creek, Dakota Creek, Deer Creek, Depot Road Ditch, Double Ditch Drain, Drayton Harbor, Duffner Ditch, Fishtrap Creek, Johnson Creek, Kamm Slough, Lummi Bay and Hale Passage, Lummi River, Mormon Ditch, Nooksack River, Pangborn Creek, Silver Beach Creek, Silver Creek, Squaw Creek, Sumas Creek, Sumas River, Tennant Creek, Unnamed Creek, unnamed creek WDF 01.0146, unnamed creek WDF 01.0148, and Whatcom Creek

High Temperature in Anderson Creek, Boulder Creek, Canyon Creek, Cavanaugh Creek, Cornell Creek, Gallop Creek, Hoff Creek, Howard Creek, Nooksack River, Racehorse Creek, Roaring Creek, and Whatcom Creek

Dissolved Oxygen in Anderson Ditch, Bender Road Ditch, Benson Road Ditch, Bertrand Creek, Clearbrook Creek, Dakota Creek, Deer Creek, Depot Road Ditch, Duffner Ditch, Grays Harbor County Drainage Ditch No.1, Johnson Creek, Kamm Slough, Mormon Ditch, Pangborn Creek, Silver Creek, Squaw Creek, Sumas Creek, Tennant Creek, unnamed creek WDF 01.0146, unnamed creek WDF 01.0148 and Lake Whatcom

pH in Bellingham Bay, Deer Creek, Kamm Slough, Mormon Ditch, Pangborn Creek, and Squaw Creek

Metals in Bellingham Bay and Strait of Georgia

Pesticides in Bellingham Bay and Strait of Georgia

Organics in Bellingham Bay and Strait of Georgia

Nutrients in Bertrand Creek and Deer Creek

Low Instream Flow in Bertrand Creek, Fishtrap Creek, and Nooksack River

PCBs in Bellingham Bay and Strait of Georgia

Sediment Bioassay in Bellingham Bay and Strait of Georgia

Fine Sediments in Anderson Creek, Howard Creek, Nooksack River, and Racehorse Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10mg/L

Pesticides – Detected in public wells

Sole Source Aquifer

None

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas

1.95 shoreline miles restricted
22.30 shoreline miles prohibited
20.73 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #1

1. TMDL for Bellingham Bay
2. TMDL for Lake Whatcom
3. TMDL for Whatcom Creek
4. TMDL for Nooksack River
5. TMDL for Fishtrap Creek
6. TMDL for Johnson Creek
7. TMDL for Sumas River
8. US Forest Service Northwest Forest Plan
9. City of Blaine, Everson, Ferndale, Lynden, Nooksack, and Sumas Stormwater Plans
10. Silver Creek, Ten-mile Creek, Kamm Creek, and Drayton Harbor Watershed Plans
11. Lake Whatcom Restoration Plan
12. On-site Sewage System Program, Whatcom County Health
13. Whatcom County Shellfish Protection Implementation Program, Whatcom CD
14. Stream Team, Whatcom CD
15. Water Quality Education Program,
16. Small Farm Education Program, Whatcom CD
17. Dairy Nutrient Management Planning Program, Whatcom CD
18. Environmental Quality Incentive Program, Whatcom CD
19. Dairy Nutrient Cost Share Program, Whatcom CD
20. Sixth Grade Conservation Program, NRCS
21. Chuckanut Bay On-Site/Shellfish Project, Whatcom County Health
22. Shoreline Inventory of Whatcom County, Whatcom County Marine Resources Committee
23. Rapid Shoreline Inventory Program, People for Puget Sound
24. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
25. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
26. Salmon & Steelhead Inventory & Assessment Program, WDFW
27. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
28. Estuarine Health Indicator Project, PSWQAT
29. Biotoxins Monitoring Program, DOH
30. Commercial Shellfish Growing Area Classification Program, DOH
31. Recreational Shellfish Program, DOH
32. Salmonid/Steelhead Habitat Limiting Factors Inventory for WRIA #1, WA State Conservation Commission, 2002.
33. Salmon Habitat Recovery Project Prioritization for WRIA #1, WA State Fish and Wildlife 2001.
34. Nooksack River Watershed Riparian Functions Assessment, Nooksack Indian Tribe, 2001.
35. Priority Watersheds for Restoration and Conservation of Fish and Wildlife, WA State Department(s) of Fish and Wildlife and Natural Resources, 1995.
36. Nooksack Estuary Recovery Project Section 22 Planning Study, USACE, 2000.
37. Salmonid and Steelhead Inventory and Assessment Program, WDFW
38. Warnich Watershed Analysis, WA State Department of Natural Resources, 1995.
39. Hansen Creek Watershed Management Plan, Skagit County Public Works Dept., 2002.

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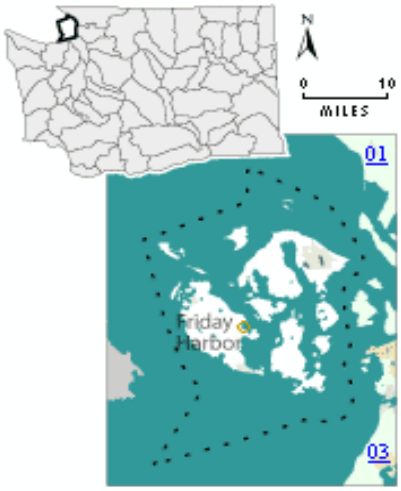
San Juan Basin - WRIA #2



WRIA #2 encompasses about 399,583 acres. The climate is influenced by maritime air masses and the rain shadow effect of the Olympic Mountains. The islands are part of the Puget Lowlands ecoregion. The San Juan Islands are glacial scoured islands with small intermittent streams and limited surface water. Surface material is very gravelly silt loam to gravelly loam. Potential vegetation is Douglas-fir, grand fir, and some Garry oak. Mean temperature ranges from 36/46° (winter) to52/62° (summer).

Counties

San Juan (100%)

Primary Towns and Cities

Friday Harbor Eastsound

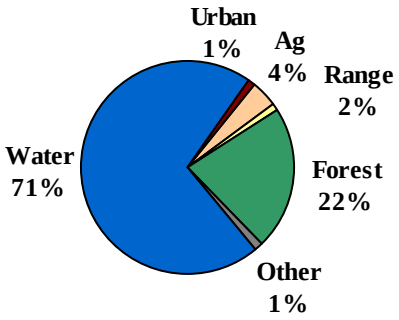
Tribal Reservation Lands

None

Special Purpose Districts

San Juan County Conservation District

Land Use in the San Juan Basin



Land Base (in acres)

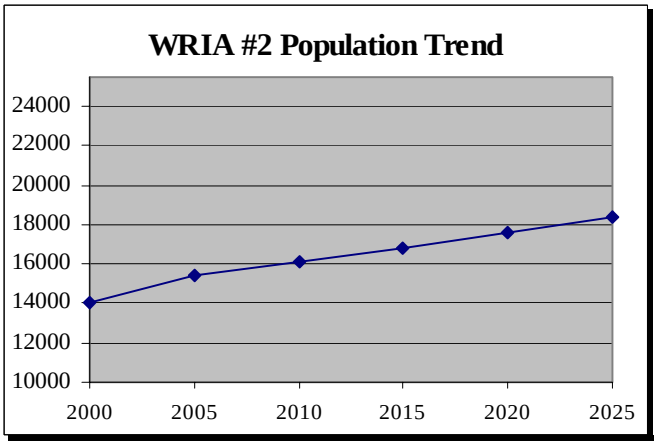
Federal	2,786	7.0%
State	10,278	2.6%
Local	733	2.0%
Tribal	0-	0%
Private	385,785	96.5%

Principal Economic Activities (as total wages)

Agriculture/Forestry	3%
Construction	10%
Retail Trade	23%
Services	29%
Government	19%
Other	16%

Population

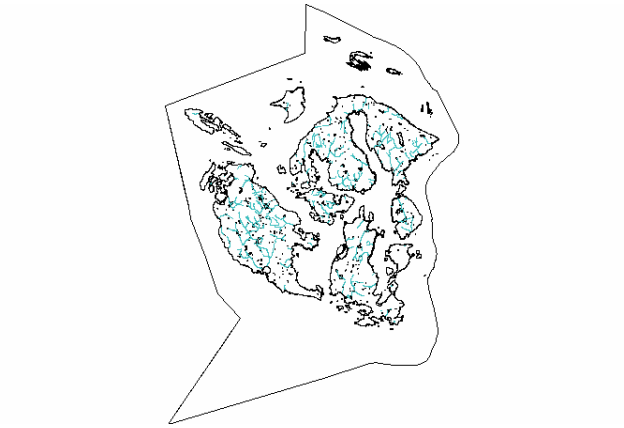
There are approximately 14,077 people living in the basin. The primary population centers are Eastsound and Friday Harbor. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #2

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in San Juan Channel

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides – Have been detected in wells

Unknown water quality impacts from the presence of numerous marinas.

The degree of nitrate contamination of ground water is unknown

Some near-shoreline chloride ground water contamination due to aquifer seawater intrusion

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Not Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas
0.36 shoreline miles prohibited
0.71 shoreline miles conditionally approved
16.31 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #2

1. Water quality assessment of Trout Lake. Trout Lake supplies water to Friday Harbor, Town of Friday Harbor
2. San Juan Shoreline Stewardship Program, Friends of the San Juans
3. Rapid Shoreline Inventory Program, People for Puget Sound
4. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
5. Puget Sound Indicator Project (PSH 2002), PSAT
6. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
7. Salmon & Steelhead Inventory & Assessment Program, WDFW
8. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
9. Digital Coastal Atlas, DOE
10. Estuarine Health Indicator Project, PSWQAT
11. Biotoxins Monitoring Program, DOH
12. Commercial Shellfish Growing Area Classification Program, DOH
13. Recreational Shellfish Program, DOH
14. Farm & Forest Planning Program, San Juan CD
15. Watershed Planning Program, San Juan CD

16. Watershed Implementation Program, San Juan CD
17. Septic Operation & Maintenance Program, San Juan County Health
18. Water Quality Monitoring Program, San Juan CD
19. BMP Technical Assistance Program, San Juan CD
20. Watershed Stewards Program, San Juan CD
21. Public Education & Information Program, San Juan CD
22. Shoreline Master Program, San Juan County Planning
23. Development & Regulation for Stormwater Management Program, San Juan County Planning

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Lower Skagit-Samish Basin-WRIA #3

WRIA #3 encompasses about 472,912 acres, mostly within the Cascade Ecoregion. Rolling moraines and foothills, floodplains and meandering rivers characterize the lower Skagit. Surface material is deep fertile silt loam to very gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, red alder, and some Douglas-fir. The annual precipitation averages 37 inches per year. Mean temperature is 36/46° (winter) to 52/62° (summer).

Counties

Skagit	(94%)	Whatcom	(4%)
Snohomish	(2%)		

Primary Towns and Cities

Mount Vernon	Anacortes
Sedro-Woolley	Burlington
La Conner	Lyman

Tribal Reservation Lands

Swinomish Tribe	Upper Skagit Tribe

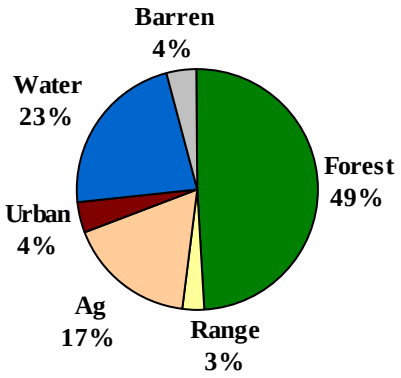
Special Purpose Districts

Skagit Conservation District

Whatcom Conservation District

Snohomish Conservation District

Land Use in the Lower Skagit



Land Base

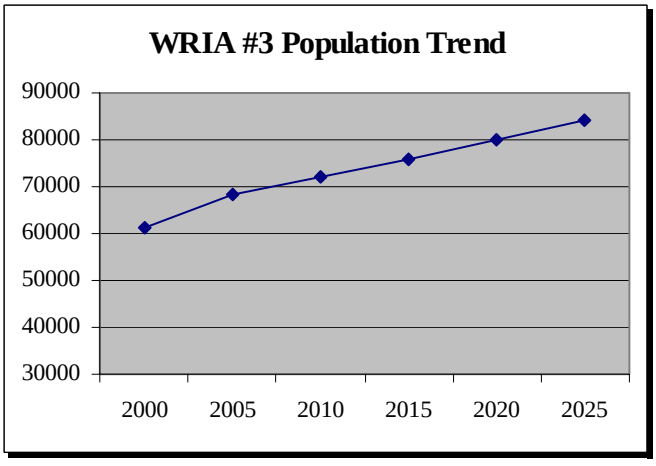
Federal	8,209	1.7%
State	60,219	12.7%
Local	2,935	.6%
Tribal	7,334	1.6%
Private	394,213	83.4%

Principal Economic Activities (as total wages)

Agriculture/Forestry	9%
Manufacturing	12%
Retail Trade	23%
Services	20%
Government	20%
Other	16%

Population

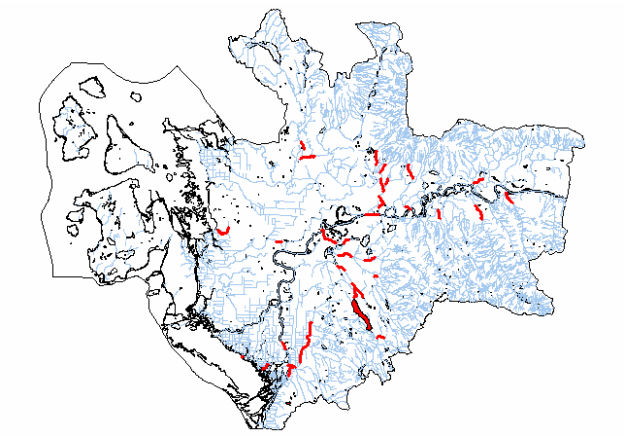
There are approximately 61,453 people living in the Lower Skagit-Sammish Basin. The primary population centers are Mount Vernon and Anacortes.



Surface Water Quality

Water Quality Assessment Map WRIA #3

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Browns Slough, Carpenter Creek, Friday Creek, Gages Slough, Hansen Creek, Indian Slough, Joe Leary Slough, No-name Slough, Nookachamps Creek, Samish Bay, Samish River, Skagit Bay, Similk Bay, Skagit River, Unnamed Creek, Wiley Slough

High Temperature in Carpenter Creek, Coal Creek, Cumberland Creek, Day Creek, Fisher Creek, Hansen Creek, Indian Slough, Joe Leary Slough, Jones Creek, Mud Lake Creek, Nookachamps Creek, Otter Pond Creek, Red Creek, Turner Creek, and Wiseman Creek

Dissolved Oxygen in Indian Slough, Joe Leary Slough, and Noname Slough

Nutrients in Big Lake, and Ketchum Lake

PCBs in Fidalgo Bay, Padilla Bay, and Guemes Channel

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 10 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; growth pressure

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas

8.41 shoreline miles prohibited
1.23 shoreline miles conditionally approved
12.04 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #3

1. Temperature TMDL for Carpenter Creek, Fisher Creek, Fisher Slough, Nookachamps Creek, and Hansen Creek
2. TMDL for Skagit River
3. TMDL for Nookachamps Creek
4. TMDL for Campbell Lake
5. TMDL for Erie Lake
6. Samish Bay Watershed Monitoring Project, Skagit County Public Works
7. Hansen Watershed Analysis, 1994
8. Forestry for Clean Water, Skagit CD
9. Skagit Nearshore Habitat Inventory, Skagit System Cooperative
10. Skagit Estuary Restoration Assessment, People for Puget Sound
11. Rapid Shoreline Inventory Program, People for Puget Sound
12. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
13. Puget Sound Indicator Project (PSH 2002), PSAT
14. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
15. Salmon & Steelhead Inventory & Assessment Program, WDFW
16. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
17. Digital Coastal Atlas, DOE
18. Estuarine Health Indicator Project, PSWQAT
19. Biotoxins Monitoring Program, DOH
20. Commercial Shellfish Growing Area Classification Program, DOH
21. Recreational Shellfish Program, DOH
22. Watershed Masters Volunteer Training Program, Skagit CD
23. Stream Team, Skagit CD
24. Technical Assistance Program, Skagit CD
25. Farm Planning Program, Skagit CD
26. Forest Stewardship Program, Skagit CD
27. Water Quality Education Program, Skagit CD
28. Onsite Sewage Program, Skagit County Health
29. O & M Education Program, Skagit County Health
30. Samish Bay Watershed Action Plan, Skagit County
31. Nookachamps Watershed Action Plan, Skagit County
32. Padilla Bay/Bayview Watershed Action Plan, Skagit County
33. City of Mt. Vernon Comprehensive Surface Water Management Plan, 1996

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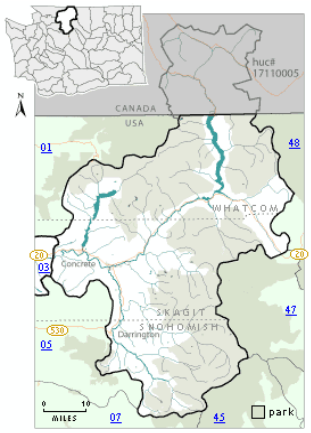
Upper Skagit Basin - WRIA #4



WRIA #4 encompasses about 1,566,575 acres. The landscape is mountainous and heavily forested, and is mostly contained within the Cascade ecoregion. High-glaciated ridges, plateaus, and U-shaped valleys characterize this basin. Surface material is very deep sandy, gravelly loams to undifferentiated bare rock and rubble. Potential natural vegetation is Pacific fir, sub-alpine fir, Douglas-fir, and other mixed conifers. Average rainfall equals nearly 100 inches per year. Mean temperature is13/36° (winter) to 45/70° (summer).

Counties

Whatcom (39%) Skagit (38%)

Snohomish (23%)

Primary Towns and Cities

Darrington Concrete

Tribal Reservation Lands

Sauk-Suiattle Tribe

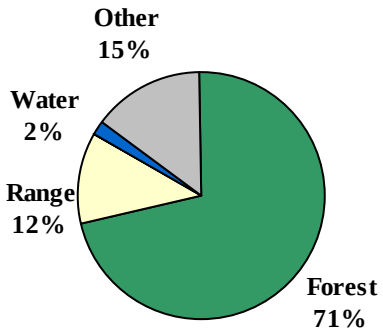
Special Purpose Districts

Whatcom Conservation District

Skagit Conservation District

Snohomish Conservation District

Land Use in the Upper Skagit



Land Base (in acres)

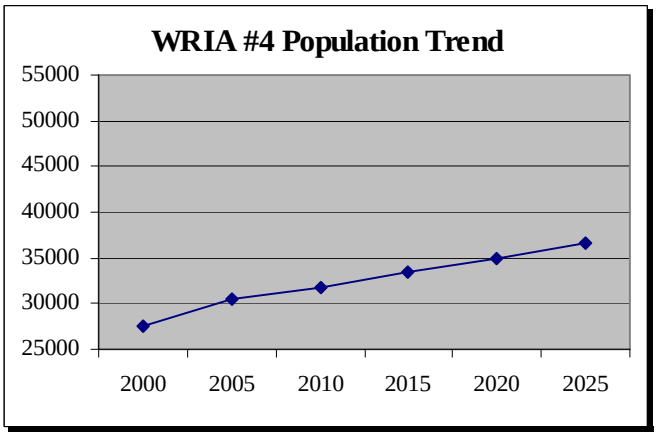
Federal	1,379,846	88.1%
State	48,420	3.1%
Local	0	0%
Tribal	0	0%
Private	138,308	8.8%

Principal Economic Activities (as total wages)

Agriculture/Forestry	17%
Manufacturing	12%
Retail Trade	15%
Services	20%
Government	20%
Other	16%

Population

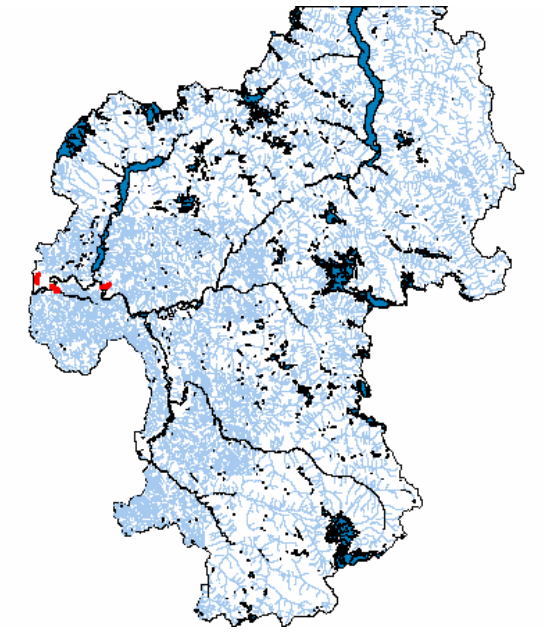
There are approximately 3,800 people living in the Upper Skagit Basin. The primary population centers are Darrington and Concrete. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #4

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Finney Creek, Grandy Creek, and Jackman Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; limited growth pressure

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #4

1. US Forest Service Northwest Forest Plan
2. Skagit Watershed Rehabilitation, Skagit CD
3. Watershed Masters Volunteer Training Program, Skagit CD
4. Stream Team, Skagit CD
5. Technical Assistance Program, Skagit CD
6. Farm Planning Program, Skagit CD
7. Forest Stewardship Program, Skagit CD
8. Water Quality Education Program, Skagit CD
9. Onsite Sewage Program, Skagit County Health
10. O & M Education Program, Skagit County Health

Stillaguamish Basin - WRIA #5

WRIA #5 is located in northern end of Puget Sound and is part of the Puget Sound Lowlands. The drainage area is about 461,015 acres. Rolling moraines and foothills, floodplains and meandering rivers characterize the lower Skagit. Surface material is very gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, red alder, and some Douglas-fir. The average annual precipitation is 69 inches per year. Mean temperature is 36/46° (winter) to 52/62° (summer).

Counties

Snohomish	(73%)
Skagit	(27%)

Primary Towns and Cities

Arlington	Stanwood
Granite Falls	

Tribal Reservation Lands

Stillaguamish Tribe

Special Purpose Districts

Snohomish Conservation District

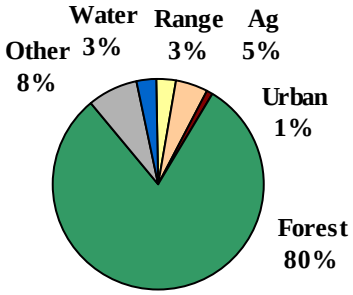
Skagit Conservation District

Drainage District #7

Snohomish County Clean Water District

Stillaguamish Flood Control District

Land use in the Stillaguamish



Land Base (in acres)

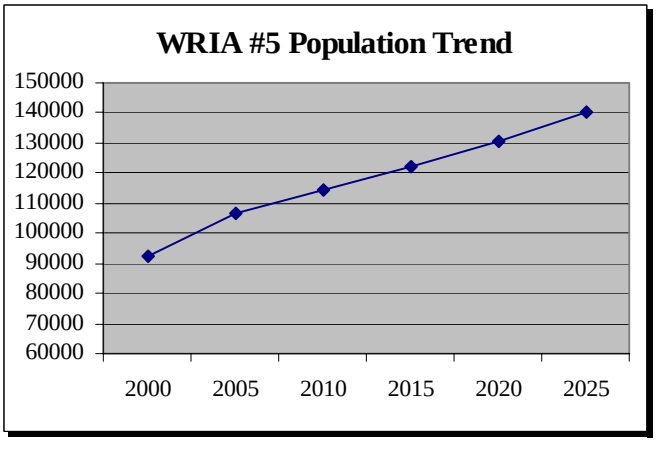
Federal	176,128	38.2%
State	73,827	16.0%
Local	0	0%
Tribal	101	.02%
Private	210,958	45.8%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Construction	6%
Manufacturing	28%
Retail	19%
Services	19%
Government	15%

Population

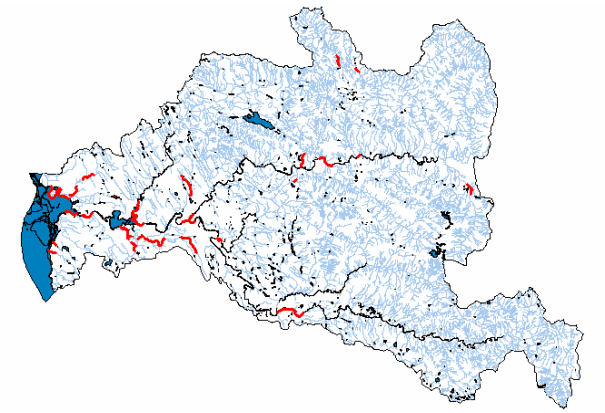
There are approximately 22,955 people living in the Stillaguamish Basin. The primary population center is Arlington. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #5

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Fish Creek, Harvey Creek, Jim Creek, Jorgenson Slough, Martha Lake Creek, Old Stillaguamish River, Port Susan, Portage Creek, Stillaguamish River, and unnamed creek WDF 05.0456

High Temperature in Deer Creek, Higgins Creek, Little Deer Creek, Pilchuck Creek, and Stillaguamish River

Dissolved Oxygen in Pilchuck Creek, Portage Creek and Stillaguamish River

pH in Stillaguamish River

Metals in Stillaguamish River

Pesticides in Stillaguamish River

Nutrients in Stillaguamish River and Sunday Lake

Turbidity in Portage Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Low risk of contamination (levels detected > 10 mg/L)

Pesticides – Have been detected in public wells.

Water Quantity

Flows not set; growth pressure

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas
0.34 shoreline miles prohibited

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #5

1. TMDL for Stillaguamish River
2. TMDL for Portage Creek
3. US Forest Service Northwest Forest Plan
4. On-Site System Education, Snohomish County Health/Stillaguamish Implementation & Review Committee
5. Snohomish County Ground Water Management Plan, Snohomish County
6. Stillaguamish Basin Restoration and Monitoring, Snohomish County
7. Stillaguamish Watershed Coordinator, Snohomish County
8. Stillaguamish Watershed Steward Program, Snohomish County
9. Native Plant Restoration & Monitoring, Snohomish County
10. Outreach & Education, Snohomish County
11. Stormwater Management Plan, Snohomish County
12. Pollution Complaint Investigation, Snohomish County
13. Riparian & Wetland Acquisition & Protection, Snohomish County

14. Stillaguamish Comprehensive Flood Hazard Management Plan, Snohomish County
15. Water Quality monitoring programs, Snohomish County and Stillaguamish Tribe
16. Snohomish County Shoreline Inventory Outreach, Snohomish County Surface Water Management
17. Rapid Shoreline Inventory Program, People for Puget Sound
18. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
19. Puget Sound Indicator Project (PSH 2002), PSAT
20. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
21. Salmon & Steelhead Inventory & Assessment Program, WDFW
22. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
23. Digital Coastal Atlas, DOE
24. Estuarine Health Indicator Project, PSWQAT
25. Biotoxins Monitoring Program, DOH
26. Commercial Shellfish Growing Area Classification Program, DOH
27. Recreational Shellfish Program, DOH
28. Fish Friendly BMPs Program, Snohomish CD
29. Small Farm Program, Snohomish CD
30. Dairy Nutrient Management Program, Snohomish CD.
31. Stillaguamish Watershed Action Plan, Snohomish County.
32. Snohomish County Groundwater Management Plan, Snohomish County SWM.

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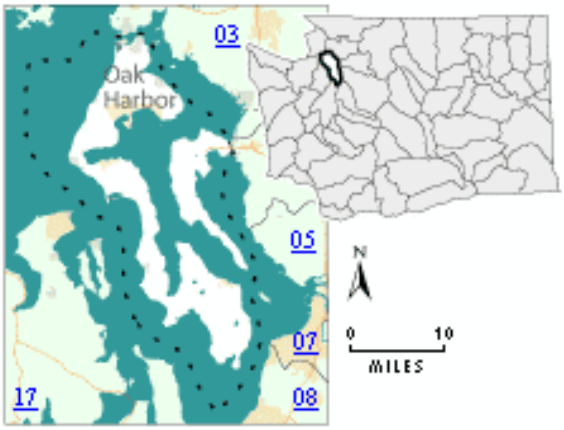
Island Basin - WRIA #6



WRIA #6 encompasses about 332,498 acres. The island is part of the Puget Lowland ecoregion. Average annual rainfall is nearly 18 inches a year. Rolling glacial till plains with small, low to medium gradient streams. Surface material is moderately deep, gravelly sandy loam. Potential vegetation is western hemlock, western red cedar, and Douglas-fir. Mean temperature is 36/45° (winter) to 51/64° (summer).

Counties

Island (100%)

Primary Towns and Cities

Oak Harbor Coupeville Langely

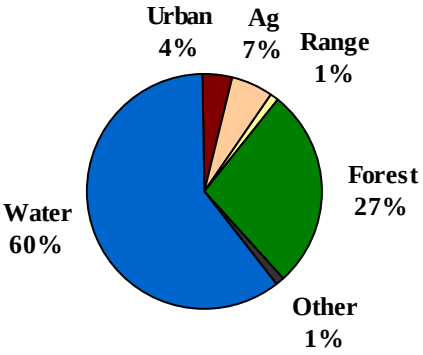
Tribal Reservation Lands

None

Special Purpose Districts

Whidbey Island Conservation District

Land use in Island County



Land Base (in acres)

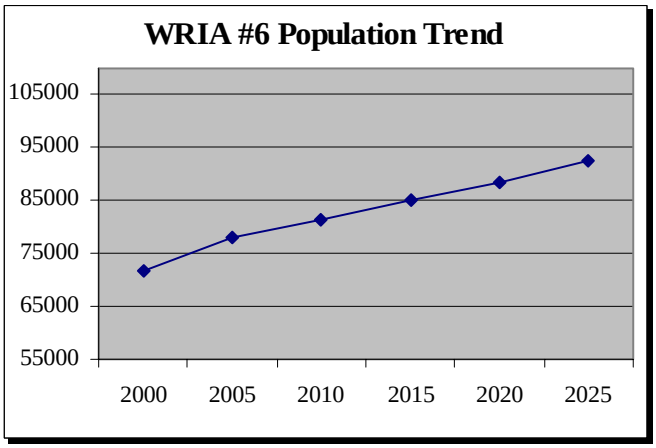
Federal	8,055	2.4%
State	6,330	1.9%
Local	0	0%
Tribal	0	0%
Private	318,112	95.7%

Principal Economic Activities (as total wages)

Agriculture	2%
Retail Trade	23%
Services	24%
Government	32%
Construction	5%
Other	14%

Population

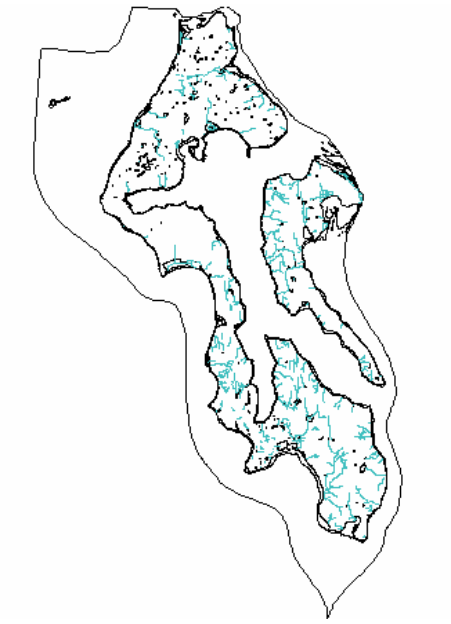
There are approximately 78,900 people living in the Island Basin. The primary population centers are Oak Harbor, Coupeville, and Langley. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #6

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Port Susan, Skagit Bay, and Similk Bay

Dissolved Oxygen in Penn Cove, Saratoga Passage, Skagit Bay and Similk Bay

pH in Saratoga Passage

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Camano Island Aquifer

Whidbey Island Aquifer

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

13.18 shoreline miles prohibited

7.70 shoreline miles conditionally approved

14.30 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

No Significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #6

1. Water Well Survey Program, Island County Health
2. DOE Financial Assistance for Septic Repairs, Island County Health
3. Central/South Whidbey Watershed Non-Point Pollution Prevention Action Plan, Island County Public Works
4. North Whidbey Watershed Non-Point Pollution Prevention Action Plan/Implementation, Island County Public Works
5. Camano Island Watershed Non-Point Pollution Prevention Action Plan, Island County Public Works
6. Freeland Water Quality Improvement Report, Island County Public Works
7. Salmon Supporting Creeks Inventory, Island County Public Works
8. Island County Eelgrass Habitats Assessment, Island County Marine Resources Committee
9. WSU Beach Watcher Baseline Intertidal Monitoring, WSU
10. Shoreline Habitat Assessment of Hood Canal and Eastern San Juan de Fuca, University of Washington and Port Gamble S'Klallam Tribe

11. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
12. Puget Sound Indicator Project (PSH 2002), PSAT
13. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
14. Salmon & Steelhead Inventory & Assessment Program, WDFW
15. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
16. Digital Coastal Atlas, DOE
17. Estuarine Health Indicator Project, PSWQAT
18. Biotoxins Monitoring Program, DOH
19. Commercial Shellfish Growing Area Classification Program, DOH
20. Recreational Shellfish Program, DOH
21. Water Quality Implementation Program, Whidbey Island CD
22. Puget Sound Implementation Plan, Whidbey Island CD
23. Environmental Quality Implementation Plan (EQUIP), Whidbey Island CD
24. Watershed Habitat Improvement Plan (WHIP), Whidbey Island CD

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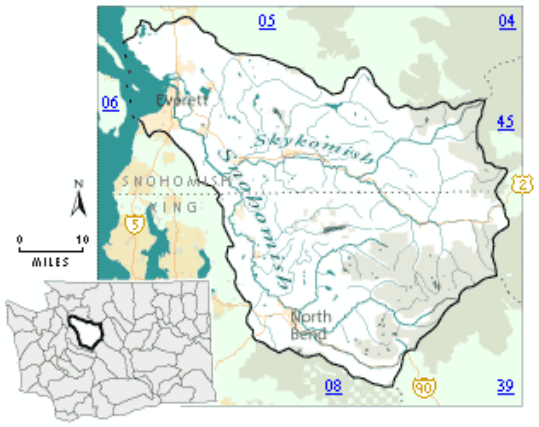
Snohomish Basin - WRIA #7



WRIA #7 encompasses about 1,222,169 acres. Sixty percent of the WRIA is in the Cascade ecoregion, and 40% is in the Puget Lowlands. Average rainfall is 85 inches per year. This basin has rolling moraines and foothills in the west, and low mountains with broad glaciated valleys in the east. Moderately deep silt loam to gravelly silt loam makes up the surface material. Potential natural vegetation includes western hemlock, western red cedar and Douglas-fir. Mean temperature ranges from 30/43° (winter) to 50/72° (summer).

Counties

Snohomish	(51%)
King	(49%)

Primary Towns and Cities

Everett	Monroe	Marysville
Duvall	Mukilteo	Lake Stevens
Snohomish	North Bend	Snoqualmie
Sultan	Carnation	Gold Bar

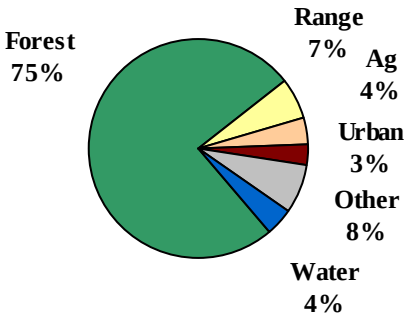
Tribal Reservation Lands

Tulalip Tribe

Special Purpose Districts

King Conservation District
Snohomish Conservation District
Diking District(s) #2, #3, #4, and #5
Drainage District(s) #6, #8, and #13
French Slough Flood Control District
Marshland Flood Control District
Patterson Flood Control Zone District

Land Use in the Snohomish Basin



Land Base (in acres)

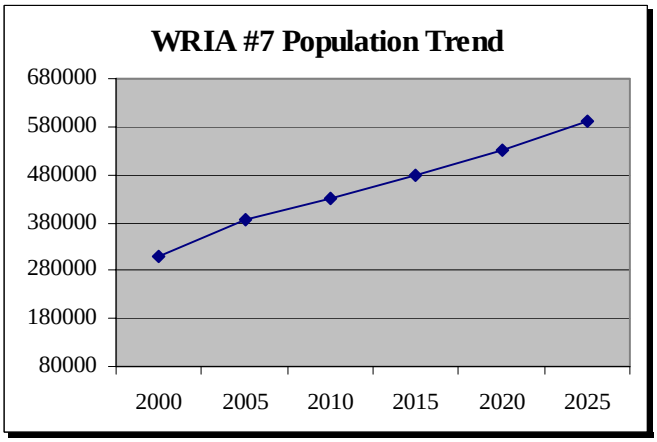
Federal	486,182	39.8%
State	159,566	13.0%
Local	19,047	1.6%
Tribal	20,467	1.7%
Private	536,906	43.9%

Principal Economic Activities (as total wages)

Government	15%
Agriculture/Forestry	2%
Construction	6%
Manufacturing	28%
Retail	19%
Services	19%

Population

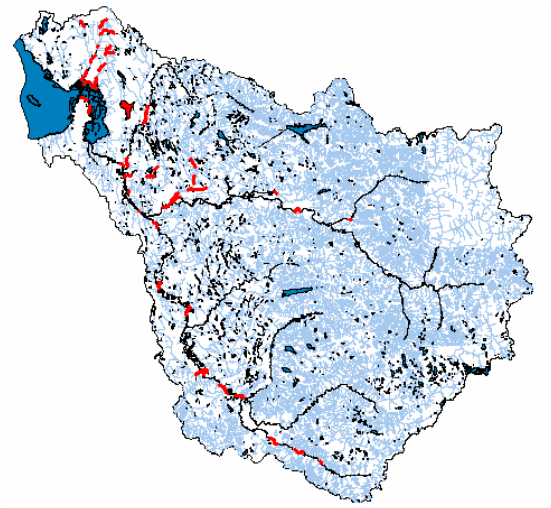
There are approximately 349,249 people living in the Snohomish River Basin. The primary population centers are Everett, Monroe, Mukilteo, and the North Bend/Snoqualmie area. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #7

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Allen Creek, Blackmans Lake, Ebey Slough, French Creek, Pilchuck River, Quilceda Creek, Skykomish River, Snohomish River, and Woods Creek

High Temperature in Pilchuck River, Skykomish River, Snohomish River, Snoqualmie River, and Wallace River

Dissolved Oxygen in Allen Creek, Ebey Slough, French Creek, Possession Sound, Quilceda Creek, Snohomish River, and Wood Creek

pH in Ebey Slough, Raging River and Snoqualmie River

Metals in Port Gardner, Inner Everett Harbor, Possession Sound, Skykomish River, and Snohomish River

Pesticides in Possession Sound, Port Gardner, Inner Everett Harbor, and Snohomish River

Organics in Port Gardner, Inner Everett Harbor, Possession Sound and Snohomish River

Nutrients in Blackmans Lake and Stevens Lake

PCBs in Port Gardner and Inner Everett Harbor

Sediment Bioassay in Port Gardner, Inner Everett Harbor, and Possession Sound

Water Column Bioassay in Ebey Slough

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 5 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Newberg Area Aquifer

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

5.61 shoreline miles prohibited

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #7

1. TMDL for Snohomish River Estuary
2. TMDL for Allen Creek
3. TMDL for Quilceda Creek
4. TMDL for French Creek
5. TMDL for Woods Creek
6. TMDL for Pilchuck River
7. TMDL for Snoqualmie River

8. Snohomish River Comprehensive Flood Control Management Plan, 1992, Snohomish County
9. Lake Stevens Watershed Management Plan, Snohomish County
10. Quilceda/Allen Watershed Action Plan, Snohomish County
11. Water Quality Monitoring Program, Snohomish County
12. US Forest Service Northwest Forest Plan
13. Snohomish County Stormwater Management Plan, Snohomish County
14. Outreach & Education, Snohomish County
15. Pollution Complaint Investigation, Snohomish County
16. Riparian & Wetland Acquisition & Protection Program, Snohomish County
17. French Creek Watershed Management Plan, Snohomish County
18. King County Flood Hazard Reduction Plan
19. King County Stormwater Management Plan
20. Snohomish Watershed Steward Program, Snohomish County
21. Cemetery Creek Watershed Restoration Plan, Snohomish County
22. Snohomish County Ground Water Management Plan, Snohomish County
23. Quilceda/Allen Citizen Action Program, Snohomish County
24. Snohomish Health District Drainfield Awareness and Vital Education (DAVE), Snohomish Health District
25. Snohomish Estuary Wetland Integration Plan (SEWIP), City of Everett
26. Snohomish County Shoreline Inventory Outreach, Snohomish County Surface Water Management
27. Small Farm Planning, King CD
28. Dairy Waste Planning, King CD
29. Agricultural Water Quality BMPs, King CD
30. Agricultural Education Program, King CD
31. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
32. Puget Sound Indicator Project (PSH 2002), PSAT
33. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
34. Salmon & Steelhead Inventory & Assessment Program, WDFW
35. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
36. Digital Coastal Atlas, DOE
37. Estuarine Health Indicator Project, PSWQAT
38. Biotoxins Monitoring Program, DOH
39. Commercial Shellfish Growing Area Classification Program, DOH
40. Recreational Shellfish Program, DOH
41. Fish Friendly BMPs Program, Snohomish CD
42. Small Farm Program, Snohomish CD
43. Dairy Nutrient Management Program, Snohomish CD
44. NPDES Stormwater Management Program, King County DNR
45. On-Site Septic System Operation and Maintenance for King County, Public Health for Seattle and King Co. Snoqualmie Watershed Forum Strategy and Work Plan, 2001
46. Process-based River Basin Characterization: A Case Study Snohomish Basin 1999
47. Limiting Factors Analysis, WRIA 7
48. Snohomish River Basin Chinook Salmon Near Term Action Agenda, 2001
49. King County Groundwater Protection Program, 2002.

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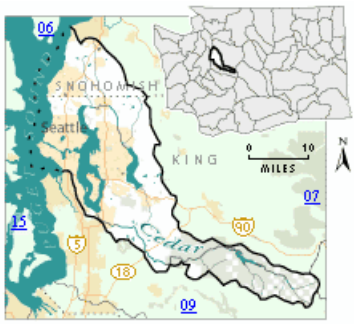
Cedar-Sammamish Basin - WRIA #8



WRIA #8 drains about 439,191 acres of Northern King and Southern Snohomish Counties. The majority of the WRIA is within the Puget Lowland ecoregion. Rolling moraines and foothills, floodplains and meandering rivers characterize this basin. Surface material is gravelly sandy loam to deep clay loam, gravelly loam, and cobbly loam. Potential natural vegetation is western hemlock, western red cedar, red alder, and some Douglas-fir. Mean temperature is 31/46° (winter) to 52/78° (summer).

Counties

King	(62%)
Snohomish	(38%)

Primary Towns and Cities

Seattle	Bellevue	Renton
Kirkland	Redmond	Edmonds
Lynwood	Mercer Island	Issaquah
Newcastle	Shoreline	Bothell
Mountlake Terrace	Lake Forest Park	
Woodinville		

Tribal Reservation Lands

none

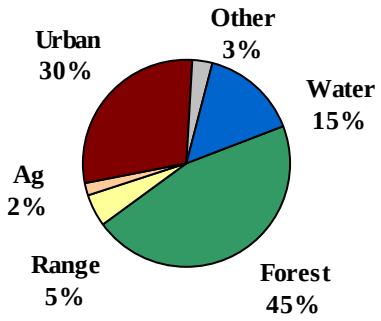
Special Purpose Districts

King County Conservation District

Snohomish County Conservation District

Snohomish County Watershed Management Area

Land Use in the Cedar-Sammamish Basin



Land Base (in acres)

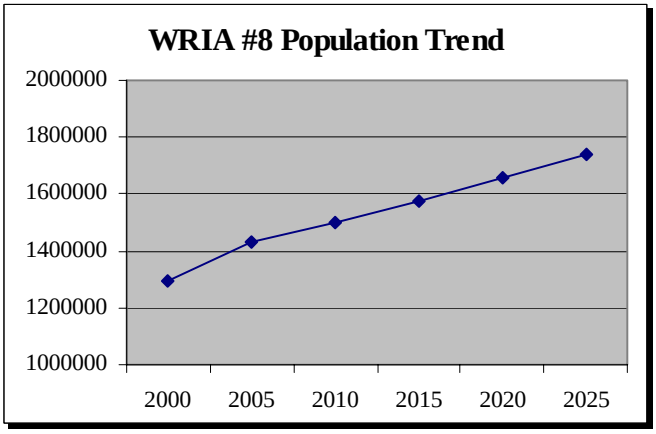
Federal	725	.2%
State	13,835	3.1%
Local	96,842	22.1%
Tribal	0	0%
Private	327,787	74.6%

Principal Economic Activities (as total wages)

Services	29%
Retail Trade	17%
Manufacturing	14%
Government	13%
Other	27%

Population

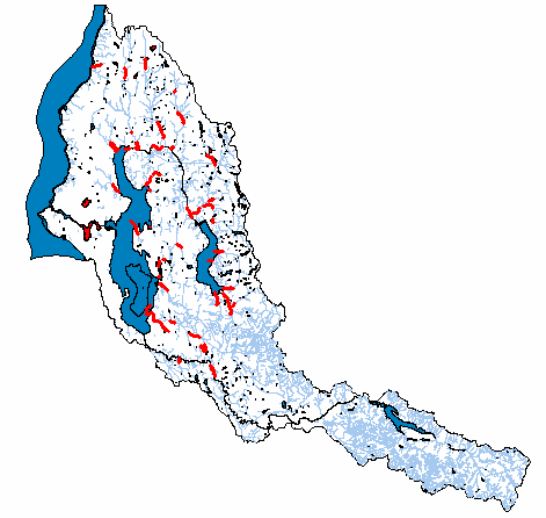
There are approximately 1,363,770 people living in the Cedar-Sammamish River Basin. The primary population centers are Seattle, Bellevue, Renton, and Kirkland. The majority of people live in cities.



Surface Water Quality

Water Quality Assessment Map WRIA #8

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Bear-Evans Creek, Cedar River, Coal Creek, Eden Creek, Fairweather Bay Creek, Forbes Creek, Issaquah Creek, Juanita Creek, Kelsey Creek, Laughing Jacob's Creek, Lewis Creek, Little Bear Creek, Lyon Creek, May Creek, McAleer Creek, Mercer Slough, Mullen Slough, Norma Creek, North Creek, Pine Lake Creek, Sammamish Lake, Sammamish River, Silver Lake, Swamp Creek, Thornton Creek, Tibbets Creek, Washington Lake, and Yarrow Bay Creek

High Temperature in Fairweather Bay Creek, Issaquah Creek, May Creek, and Sammamish River

Dissolved Oxygen in Mercer Slough, Norma Creek, North Creek, Sammamish River, and Swamp Creek

pH in Mercer Slough, and Sammamish River

Metals in Bear-Evans Creek, May Creek, and Puget Sound

Pesticides in Kelsey Creek, Puget Sound and Union Lake/Lake Washington Ship Canal

Organics in Puget Sound

Nutrients in Beaver Lake NO.1, Beaver Lake NO.2, Cottage Lake, Green Lake, Martha Lake, and Scriber Lake

PCBs in Puget Sound

Sediment Bioassay in Union Lake/Lake Washington Ship Canal and Washington Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

Cedar Valley Aquifer

Cross Valley Aquifer

Water Quantity

Over Appropriated; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #8

1. TMDL for Beaver Lake
2. TMDL for Tibbets Creek
3. TMDL for Laughing Jacob's Creek

4. TMDL for Eaton Creek
5. TMDL for May Creek
6. TMDL for Larsen Lake
7. TMDL for Ballinger Lake
8. TMDL for Pipers Creek
9. TMDL for North Creek
10. City of Lynwood Comprehensive Flood and Drainage Management Plan, City of Lynwood
11. Stormwater Education, City of Lynwood
12. City of Lynwood Stormwater Utility
13. Swamp Creek Watershed Action Plan, Snohomish County
14. North Creek Watershed Action Plan, Snohomish County
15. Water Quality Monitoring in North Creek; Swamp Creek; and Little Bear Creek, Snohomish County
16. South County Watershed Steward, Snohomish County
17. Outreach & Education, Snohomish County
18. Stormwater Management Plan, Snohomish County
19. Pollution Complaint Investigation, Snohomish County
20. Riparian & Wetland Acquisition & Protection, Snohomish County
21. Business Outreach & Technical Assistance, Snohomish County
22. Low Impact Development Program, Snohomish County
23. Thornton Creek Watershed Action Plan, Seattle Public Utilities
24. Cedar and Tolt River Water Quality Monitoring, Seattle Water Department
25. Pipers Creek Watershed Action Plan, Seattle Engineering
26. Water Quality Consortium Education, King County Metro
27. South County Watershed Steward Program, Snohomish County
28. Snohomish County Ground Water Management Plan, Snohomish County
29. State of the Nearshore Report, King County Dept. of Natural Resources
30. Small Farm Planning, King CD
31. Dairy Waste Planning, King CD
32. Agricultural Water Quality BMPs, King CD
33. Agricultural Education Program, King CD
34. Rapid Shoreline Inventory Program, People for Puget Sound
35. Puget Sound Indicator Project (PSH 2002), PSAT
36. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Washington Department of Health Puget Sound Ambient Monitoring Program
37. Salmon & Steelhead Inventory & Assessment Program, WDFW
38. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
39. Digital Coastal Atlas, DOE
40. Estuarine Health Indicator Project, PSAT
41. Biotoxins Monitoring Program, DOH
42. Commercial Shellfish Growing Area Classification Program, DOH
43. Recreational Shellfish Program, DOH
44. OSSS Operation and Maintenance for King County, Public Health for Seattle and King Co.
45. Issaquah Creek Final Basin and Nonpoint Source Plan, City of Issaquah
46. Lake Washington/Cedar-Sammamish Watershed Near Term Action Agenda for Salmon Habitat Conservation
47. Lake Sammamish Water Quality Management Plan, Entranco 1991
48. King County Groundwater Protection Program, 2002
49. Process-Based River Basin Characterization: A Case Study - Snohomish Basin, 1999

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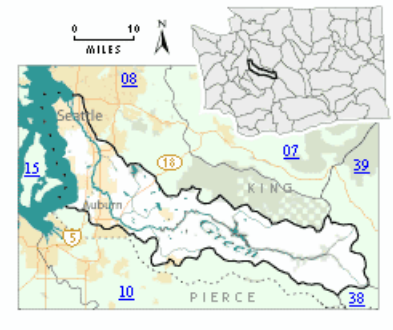
Duwamish-Green Basin - WRIA #9



WRIA #9 drains nearly 372,358 acres, and is entirely located within King County. Upper watershed is mountainous, lower watershed is part of the Puget Lowlands. Lowlands are floodplains and terraces with meandering rivers and oxbow scars. Mountains are U-shaped glaciated valleys with medium gradient rivers. Surface material ranges from deep fertile silt loam to very deep clay loam, gravelly clay loam, and cobbly loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and red alder. Mean temperature ranges from 33/44° (winter) to 50/78° (summer).

Counties

King (100%)

Primary Towns and Cities

Seattle, Renton, Kent, Auburn, Des Moines, Tukwila, Normandy, Algona, Black Diamond, Federal Way

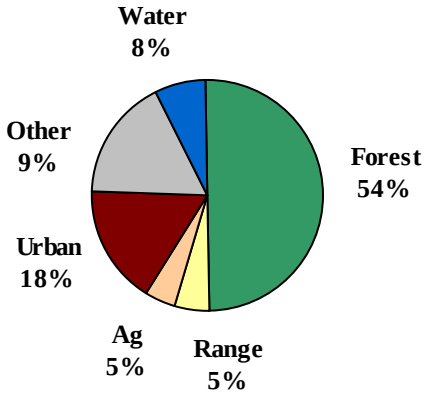
Special Purpose Districts

King Conservation District

Tribal Reservation Lands

Muckleshoot Tribe

Land Use in the Duwamish/Green



Land Base (in acres)

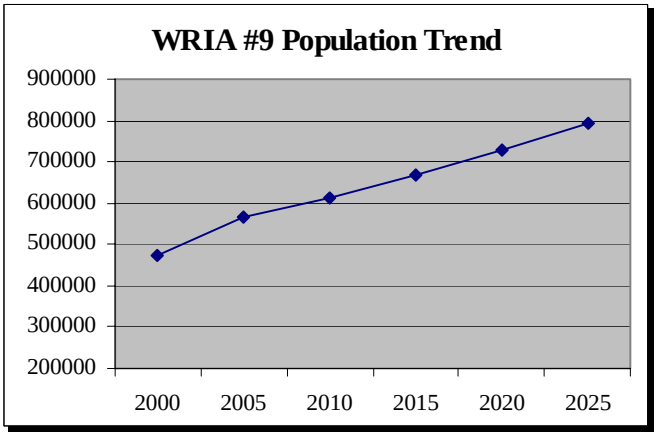
Federal	30,634	8.2%
State	29,512	8.0%
Local	23,980	6.4%
Tribal	319	.1%
Private	287,911	77.3%

Principal Economic Activities (as total wages)

Services	29%
Retail Trade	17%
Manufacturing	14%
Government	13%
Other	27%

Population

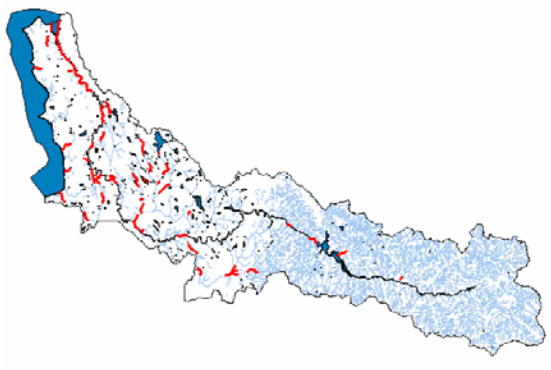
There are approximately 518,090 people living in the Duwamish-Green Basin. The primary population centers are Seattle, Renton, Kent, and Auburn. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #9

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Cold Springs Creek, Crisp Creek, Des Moines Creek, Duwamish Waterway and River, Elliott Bay, Fauntleroy Creek, Green River, Hicks Lake, Hill Creek, Joe's Creek, Lakota Creek, Longfellow Creek, Meridian Lake, Mullen Slough, Newaukum Creek, Puget Sound and East Passage, Redondo Creek, Soos Creek System, Springbrook Creek, and unnamed creek WDF 09.0046

High Temperature in Gale Creek, Green River, Hill Creek, Mullen Slough, Smay Creek, Soos Creek System, and Springbrook Creek

Dissolved Oxygen in Duwamish Waterway and River, Hill Creek, Mullen Slough, Newaukum Creek, Soos Creek System, Springbrook Creek, and unnamed creek WDF 09.0046

pH in Duwamish Waterway and River, Puget Sound and East Passage

Metals in Duwamish Waterway and River, Elliott Bay, Green River, and Springbrook Creek

Pesticides in Duwamish Waterway and River and Elliot Bay

Organics in Duwamish Waterway and River and Elliot Bay

Nutrients in Hicks Lake, Meridian Lake, Newaukum Creek, Puget Sound and East Passage, and East Passage

PCBs in Duwamish Waterway and River and Elliott Bay

Sediment Bioassay in Duwamish Waterway and River, Elliott Bay, and Springbrook Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Cedar Valley Aquifer

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

Status undetermined

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #9

1. TMDL for Duamish River
2. TMDL for Elliot Bay
3. TMDL for Green River
4. TMDL for Fenwick Lake
5. TMDL for Sawyer Lake
6. Longfellow Creek Watershed Action Plan, City of Seattle
7. King County Stream Stewardship program
8. Lake Sammamish Restoration Project, King County

9. Mill Creek Water Quality Management Plan, King County
10. Small Farms Animal Waste Disposal, King County CD
11. Lower Mill Creek Improvement Plan, City of Kent
12. Kent Water Quality Management Plan, City of Kent
13. Surface Water Action Team, King County Metro
14. Stormwater Treatment, City of Seattle
15. State of the Nearshore Report, King County Dept. of Natural Resources
16. Volunteer Monitoring of Salmon Habitat, People for Puget Sound
17. Small Farm Planning, King CD
18. Dairy Waste Planning, King CD
19. Agricultural Water Quality BMPs, King CD
20. Agricultural Education Program, King CD
21. Rapid Shoreline Inventory Program, People for Puget Sound
22. Puget Sound Indicator Project (PSH 2002), PSAT
23. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
24. Salmon & Steelhead Inventory & Assessment Program, WDFW
25. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
26. Digital Coastal Atlas, DOE
27. Estuarine Health Indicator Project, PSWQAT
28. Biotoxins Monitoring Program, DOH
29. Commercial Shellfish Growing Area Classification Program, DOH
30. Recreational Shellfish Program, DOH
31. OSSS Operation and Maintenance for King County, Public Health for Seattle and King Co.

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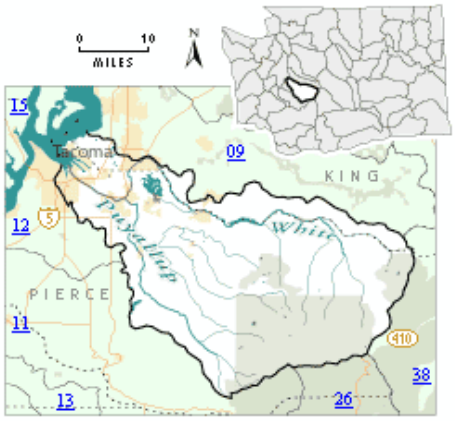
Puyallup-White Basin - WRIA #10



WRIA #10 encompasses about 673,133 acres. This area receives nearly 65 inches of rainfall per year. Upper watershed is in the Cascades ecoregion; lower watershed is in the Puget Lowlands. Lowlands are floodplains and terraces with meandering rivers and oxbow scars. Mountains are U-shaped glaciated valleys with medium gradient rivers. Surface material ranges from Surface material ranges from deep fertile silt loam to very deep clay loam, gravelly clay loam, and cobbly loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and red alder. Mean temperature ranges from 33/44° (winter) to 50/78° (summer).

Counties

Pierce (87%) King (13%)

Primary Towns and Cities

Tacoma	Puyallup
Bonney Lake	Enumclaw
Sumner	Milton
Pacific	Fife

Tribal Reservation Lands

Muckleshoot Tribe

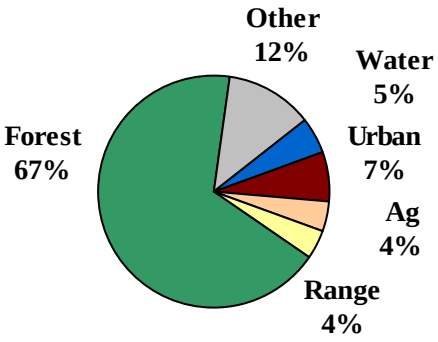
Puyallup Tribe

Special Purpose Districts

Pierce County Conservation District

King County Conservation District

Land Use in Puyallup Basin



Land Base (in acres)

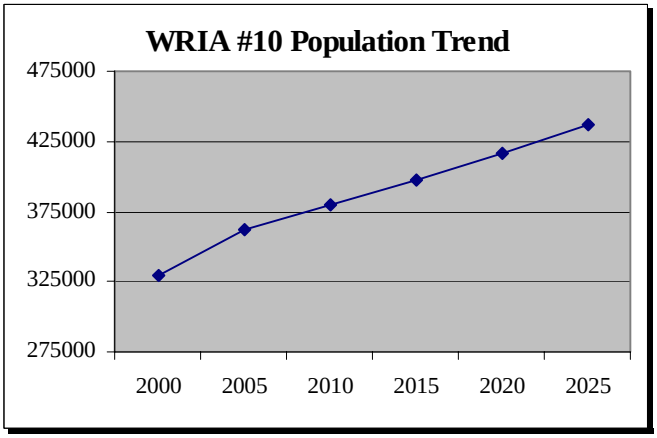
Federal	271,501	40.3%
State	4,141	.6%
Local	0	0%-
Tribal	21,697	3.2%
Private	374,793	55.9%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Manufacturing	11%
Retail Trade	20%
Services	27%
Government	21%
Other	19%

Population

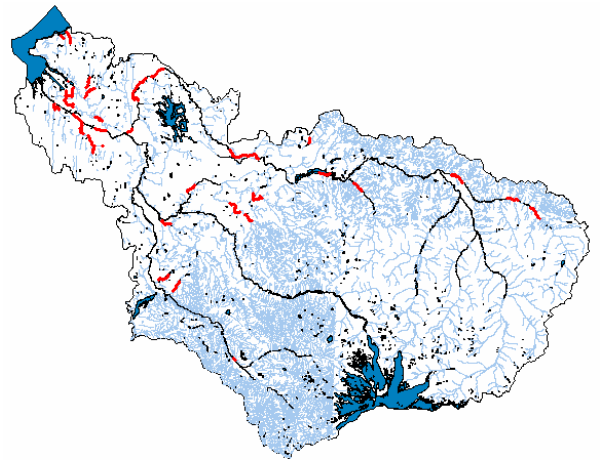
There are approximately 345,867 people living in the Puyallup-White Basin. The primary population centers are Tacoma and Puyallup. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #10

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Clarks Creek, Clear Creek, Commencement Bay, Fife Ditch, Hylebos Creek, Meeker Ditch, Puyallup River, South Prairie Creek, Swan Creek, Unnamed Creek, Wapato Creek and White River

High Temperature in Boise Creek, Clearwater River, Fox Creek, Green Water River, Kings Creek, Meeker Ditch, Scatter Creek, South Prairie Creek, Voight Creek, White River and Wilkenson Creek

Dissolved Oxygen in Commencement Bay, Fife Ditch, Meeker Ditch, and Wapato Creek

pH in Clarks Creek, Meeker Ditch, Summit Lake, and White River

Metals in Commencement Bay, White River, and Wilkenson Creek

Pesticides in Commencement Bay and Puyallup River

Organics in Commencement Bay

Nutrients in Fife Ditch

Low Instream Flow in Puyallup River, Wapato Creek, and White River

PCBs in Commencement Bay and Thea Foss Waterway

2. Impacted Designated Uses

Groundwater Quality

Nitrates - Levels detected >10mg/L

Pesticides - Have been detected in wells in WRIA 10

Sole Source Aquifer

Central Pierce County Aquifer

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #10

1. TMDL for Lower- and Mid-White River
2. TMDL for Upper White River
3. TMDL for South Prairie Creek
4. TMDL for Wilkeson Creek
5. TMDL for Meeker Ditch
6. TMDL for Clark's Creek
7. TMDL for Commencement Bay
8. TMDL for Puyallup River
9. TMDL for Boise Creek
10. U.S. Forest Service Northwest Forest Plan
11. Puyallup River Watershed Council, Pierce County
12. Lower Puyallup Watershed Action Plan – Puyallup River Watershed Council

13. WAC 400-12 Upper Puyallup Watershed Plan, Puyallup River Watershed Council
14. Watershed Education Program, Pierce County Public Works
15. Wellhead Protection Plan and Implementation, City of Tacoma
16. Small Farm Planning, King CD
17. Dairy Waste Planning, King CD
18. Agricultural Water Quality BMPs, King CD
19. Agricultural Education Program, King CD
20. Puget Sound Indicator Project, 2002, PSAT
21. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
22. Salmon & Steelhead Inventory & Assessment Program, WDFW
23. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
24. Digital Coastal Atlas, DOE
25. Estuarine Health Indicator Project, PSAT
26. Biotoxins Monitoring Program, DOH
27. Commercial Shellfish Growing Area Classification Program, DOH
28. Recreational Shellfish Program, DOH
29. Stream Team, Pierce CD
30. Small Farm Planning Program, Pierce CD
31. Dairy Waste Management Program, Pierce CD
32. NPDES Stormwater Management Program, King County DNR
33. Household Hazardous Waste Education Program, Tacoma/Pierce County Health
34. Onsite Sewage Program, Tacoma/Pierce County Health
35. Clear-Clark Creek Basin Plan, Pierce County Water Program
36. Mid-Puyallup Basin Plan, Pierce County Water Program

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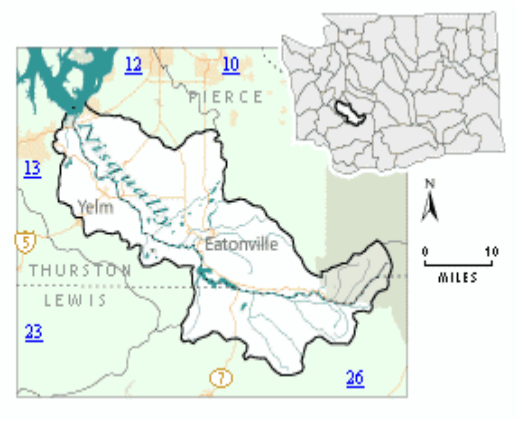
Nisqually Basin - WRIA #11



WRIA #11 encompasses nearly 491,258 acres. The headwaters start at the Nisqually Glacier on Mount Rainier and empties into Puget Sound at the Nisqually Wildlife Refuge. There are several U-shaped glaciated valleys and prairies. Medium gradient rivers and streams tend to nearly level to rolling glacial outwash and till plains. Surface material is deep well-drained gravelly loam, gravelly sandy loam, and clays. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir and some Garry oak. Mean temperature ranges from 34/46° (winter) to 47/78° (summer).

Counties

Pierce (58%) Lewis (25%)

Thurston (17%)

Primary Towns and Cities

Eatonville Roy

Yelm Dupont

Fort Lewis Military Reservation

Tribal Reservation Lands

Nisqually Tribe

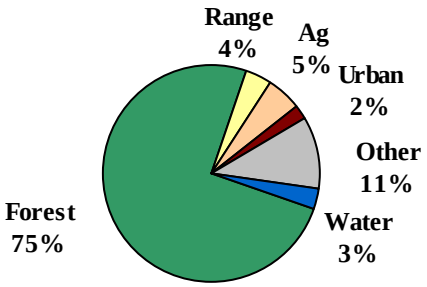
Special Purpose Districts

Pierce County Conservation District

Thurston Conservation District

Lewis County Conservation District

Land Use in the Nisqually Basin



Land Base

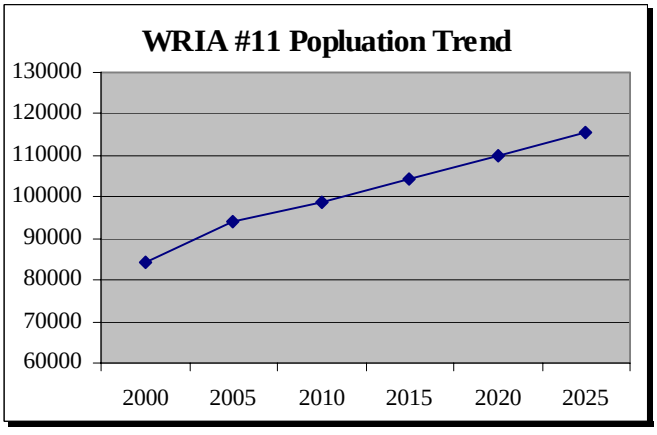
Federal	145,657	29.6%
State	64,137	13.0%
Local	1,140	.2%
Tribal	1,605	.3%
Private	278,717	56.7%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Government	38%
Services	21%
Retail Trade	18%
Other	11%

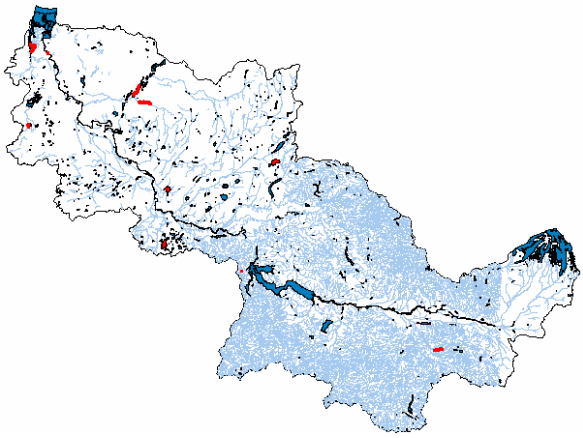
Population

There are approximately 89,142 people living in the Nisqually Basin. The primary population centers are Eatonville, Yelm, and Roy. The majority of people live in unincorporated areas.



Surface Water Quality
Water Quality Assessment Map WRIA #11

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in McAllister Creek, Nisqually Reach/ Drayton Passage, Nisqually River, and Ohop Creek

High Temperature in Catt Creek

Dissolved Oxygen in McAllister Creek

Nutrients in Clear Lake, Harts Lake, and Ohop Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides - Have been detected in wells in WRIA 11

Sole Source Aquifer

Central Pierce County Aquifer

Water Quantity

Flows set, adequacy of flow levels not determined; medium growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

7.98 shoreline miles unclassified

0.04 shoreline miles conditionally approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #11

1. Nisqually River Watershed Management Plan, Nisqually Watershed Council, Pierce County
2. Fort Lewis Water Quality Management Program, Fort Lewis
3. Nisqually Shellfish Closure Response Program 2002, Thurston CD
4. Water Quality Education, Thurston County
5. Nisqually Reach Nonpoint Remedial Action, Thurston County
6. Septic System Education and Correction, Thurston County Environmental Health
7. Puget Sound Indicator Project, 2002, PSAT
8. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
9. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
10. Digital Coastal Atlas, DOE
11. Estuarine Health Indicator Project, PSAT
12. Biotoxins Monitoring Program, DOH
13. Commercial Shellfish Growing Area Classification Program, DOH
14. Recreational Shellfish Program, DOH
15. Farm Planning Program, Thurston CD
16. Water Quality Education Program, Thurston CD
17. Implementation Program, Thurston CD
18. Farm and Dairy Nutrient Management Program, Thurston CD
19. Stream Team, Pierce CD

20. Small Farm Planning Program, Pierce CD
21. Dairy Waste Management Program, Pierce CD
22. Drinking Water Quality Program, Lewis County Health
23. Septic O&M Program, Thurston County Health
24. Ambient Monitoring Program, Thurston County Health
25. North County Groundwater Program, Thurston County Health
26. Business Pollution Prevention Program, Thurston County Health
27. Household Hazardous Waste Education Program, Tacoma/Pierce County Health
28. Onsite Sewage Program, Tacoma/Pierce County Health
29. Muck Creek Basin Plan, Pierce County Water Program

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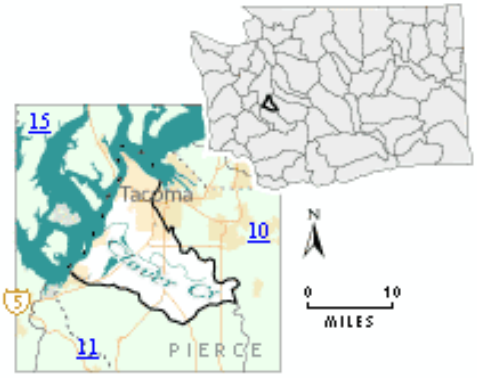
Chambers-Clover Basin - WRIA #12



WRIA #12 drains nearly 114,922 acres. 100% of the watershed is contained within the Puget Lowland ecoregion. Rainfall averages 36 inches per year.

This basin has nearly level to rolling glacial outwash and till plains with low gradient streams. Surface material is deep well drained gravelly loam, gravelly sandy loam, and sandy loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and big leaf maple. Mean temperature ranges from 33/45° (winter) to 52/77° (summer).

Counties

Pierce (100%)

Primary Towns and Cities

Tacoma	Fircrest
Steilacoom	Ruston
Lakewood	University Place

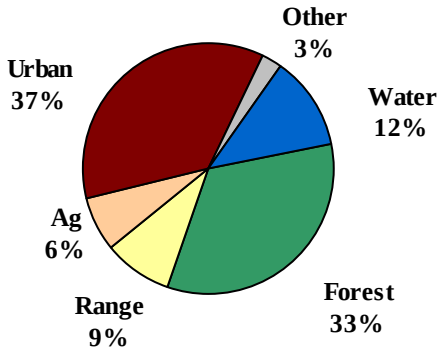
Tribal Reservation Lands

None

Special Purpose Districts

Pierce County Conservation District

Land use in the Chambers/Clover Basin



Land Base (in acres)

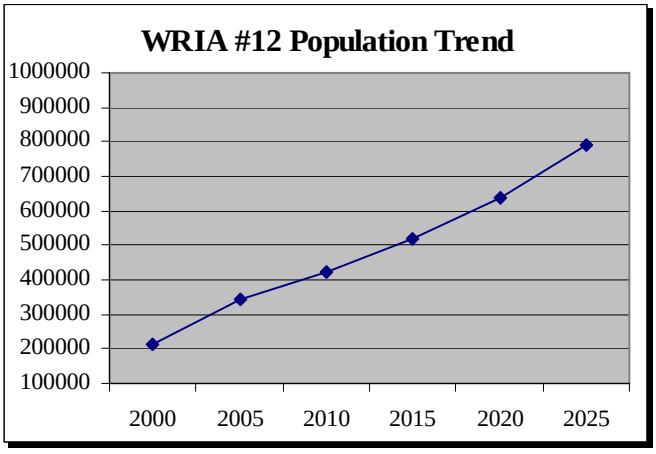
Federal	25,427	22.1%
State	345	.3%
Local	1,475	1.3%
Tribal	0	0%
Private	87,674	76.3%

Principal Economic Activities (as total wages)

Agriculture/Forestry	1%
Manufacturing	11%
Retail Trade	20%
Services	27%
Government	22%
Other	19%

Population

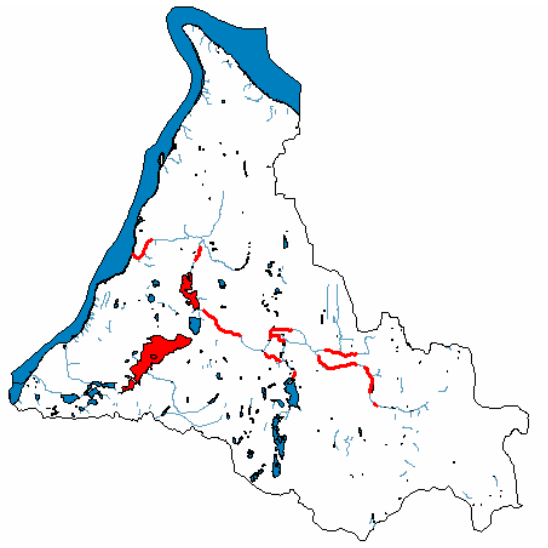
There are approximately 276,240 people living in the Chambers-Clover Basin. The primary population centers are Tacoma, Fircrest, and Steilacoom. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #12

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Chambers Creek, Clover Creek, Snake Lake, Unnamed Creek (tributary to Clover Creek at 99th Street), Unnamed Creek (tributary to Clover Creek at Bingham Ave.), and Unnamed Creek (tributary to Clover Creek at Brookdale Rd.)

High Temperature in Chambers Creek, Clover Creek, and Spanaway Creek

Dissolved Oxygen in Clover Creek and Snake Lake

Metals in Chambers Creek

Nutrients in American Lake, Snake Lake, and Steilacoom Lake

PCBs in Chambers Creek

Sediment Bioassay in Steilacoom Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates –- Levels detected >5mg/L

Pesticides – Pesticides have been detected in wells

Sole Source Aquifer

Central Pierce County Aquifer

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

18.74 shoreline miles unclassified

7.92 shoreline miles prohibited

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #12

1. TMDL for South Puget Sound
2. TMDL for Steilacoom Lake
3. TMDL for Chambers Creek
4. TMDL for Wapato Lake
5. Chambers-Clover Creek Advisory Committee, Pierce County
6. Clover Creek Basin Plan, Pierce County Water Program
7. American Lake Watershed Management Plan, City of Lakewood/Chambers-Clover Creek Basin Advisory Committee
8. Chambers-Clover Creek TMDL Watershed Plan, Pierce County Water Program

9. Watershed Education Program, Pierce County Public Works
10. Stormwater Planning, City of Tacoma
11. Wellhead Protection Implementation Strategies, Tacoma Public Utilities
12. 2514 Chambers/Clover Creek Management Plan, Tacoma/Pierce Health
13. Puget Sound Indicator Project, 2002, PSAT
14. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
15. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
16. Digital Coastal Atlas, DOE
17. Estuarine Health Indicator Project, PSWQAT
18. Biotoxins Monitoring Program, DOH
19. Commercial Shellfish Growing Area Classification Program, DOH
20. Recreational Shellfish Program, DOH
21. Stream Team, Pierce CD
22. Small Farm Planning Program, Pierce CD
23. Dairy Waste Management Program, Pierce CD

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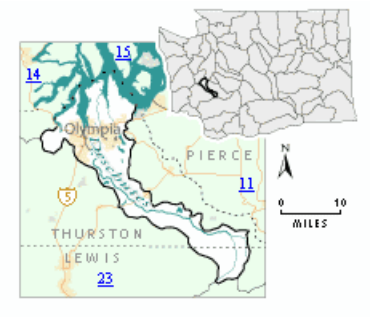
Deschutes Basin - WRIA #13



WRIA #13 is located in the southern end of Puget Sound, with 90 percent of this basin is in Thurston County, and 10 percent in Lewis County. The basin encompasses about 186,912 acres and is part of the Puget Lowland Ecoregion. This basin has nearly level to rolling glacial outwash and till plains with low gradient streams. Surface material is deep well drained gravelly loam, gravelly sandy loam, and sandy loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and big leaf maple. Mean temperature ranges from 33/45° (winter) to 52/77° (summer).

Counties

Thurston	(90%)
Lewis	(10%)

Primary Towns and Cities

Olympia	Lacey
Tumwater	Rainier

Tribal Reservation Lands

None

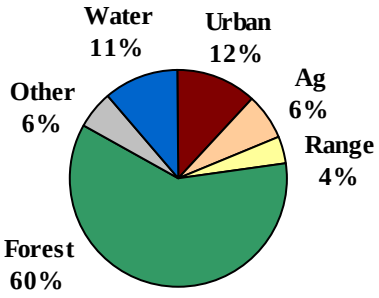
Special Purpose Districts

Thurston Conservation District

Lewis Conservation District

Port of Olympia

Land Use in Deshutes Basin



Land Base (in acres)

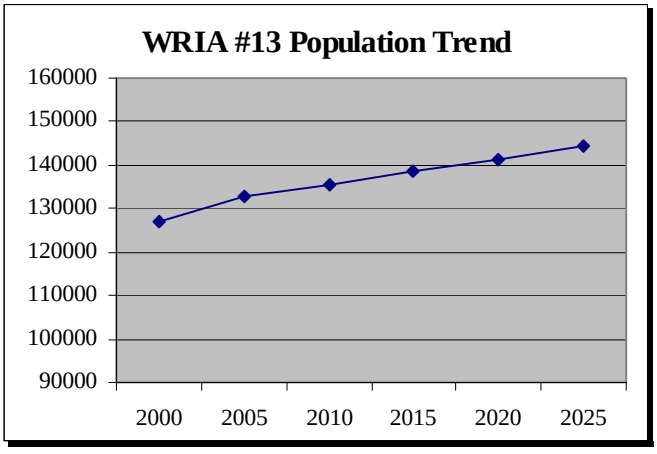
Federal	5,861	3.1%
State	5,704	3.1%
Local	452	.2%
Tribal	0	0%
Private	174,893	93.6%

Principal Economic Activities (as total wages)

Government	40%
Services	21%
Retail Trade	18%
Other	11%

Population

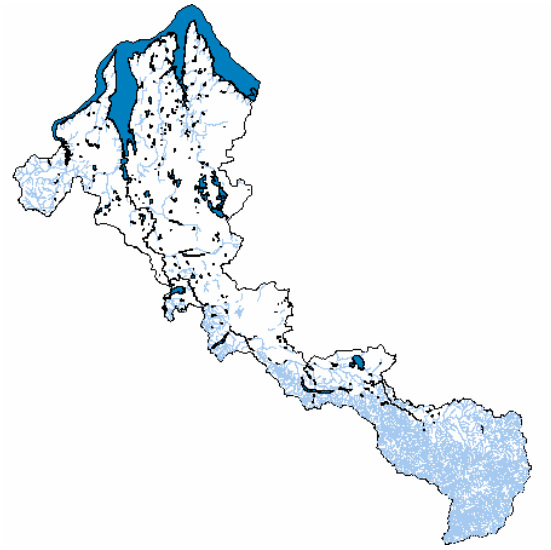
There are approximately 129,834 people living in the Deschutes River Basin. The primary population centers are Olympia, Lacey, and Rainier. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #13

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Ayer Creek, Capitol Lake, Deschutes River, Dobbs Creek, Henderson Inlet, Indian Creek, Mission Creek, Moxlie Creek, Nisqually Reach/Drayton Passage, Riechel Creek, Sleepy Creek, Woodard Creek, and Woodland Creek

High Temperature in Deschutes River Huckleberry Creek, and Woodland Creek

Dissolved Oxygen in Ayer Creek, Budd Inlet, Henderson Inlet, Peale Passage, Pickering Passage, Sleepy Creek, Squaxin Passage, Woodard Creek, and Woodland Creek

pH in Ayer Creek, Budd Inlet, Deschutes River, Dobbs Creek, McLane Creek, Peale Passage, Pickering Passage, Sleepy Creek, Squaxin Passage, and Woodard Creek

Metals in Budd Inlet

Organics in Budd Inlet

Nutrients in Capitol Lake

Low Instream Flow in Deschutes River and Woodland Creek

PCBs in Budd Inlet and Ward Lake

Sediment Bioassay in Budd Inlet

Fine Sediments in Deschutes River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >5mg/L

Pesticides – Have been detected in wells

Sole Source Aquifer

None

Water Quantity

Flows set, adequacy of flow level not determined; high growth

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

21.70 shoreline miles prohibited

3.77 shoreline miles conditionally approved

18.14 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #13

1. TMDL for Henderson Inlet
2. TMDL for Woodland Creek
3. TMDL for Woodard Bay
4. TMDL for Dobbs Creek
5. TMDL for Libbey Creek
6. Deschutes Rivers Watershed Action Plan
7. Capitol Lake Phase II Restoration
8. Chambers, Ward, and Hewitt
9. Comprehensive Drainage Basin Plan
10. City of Lacey Wetland Protection Plan
11. City of Tumwater Wellhead Protection Plan
12. Henderson Inlet Watershed Action Plan
13. Lake Lawrence Phase I Restoration Plan
14. Long Lake Phase II Restoration
15. North Thurston County Ground Water Management Plan
16. Pattison Lake Phase II Restoration Plan
17. Percival Creek Comprehensive Drainage Basin Plan
18. Deschutes Stream Team onsite sanitary survey
19. Thurston County Stormwater Control Program/Stormwater utility
20. Puget Sound Indicator Project, 2002, PSAT
21. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
22. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
23. Digital Coastal Atlas, DOE
24. Estuarine Health Indicator Project, PSAT
25. Biotoxins Monitoring Program, DOH
26. Commercial Shellfish Growing Area Classification Program, DOH
27. Recreational Shellfish Program, DOH
28. Henderson Water Quality Improvement Program, Thurston CD
29. South Sound Water Quality Program, Thurston CD
30. Farm Planning Program, Thurston CD
31. Water Quality Education Program, Thurston CD
32. Farm/Dairy Nutrient Management Program, Thurston CD
33. Septic O&M Program, Thurston County Health
34. Ambient Monitoring Program, Thurston County Health
35. North County Groundwater Program, Thurston County Health
36. Business Pollution Prevention Program, Thurston County Health

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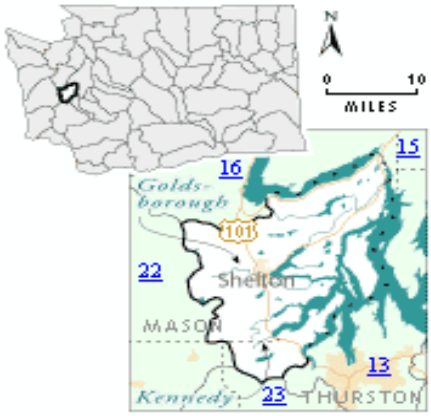
Kennedy-Goldsborough - WRIA #14



WRIA #14 is located in the southern end of Puget Sound. The basin covers 244,146 acres and is part of the Puget Lowland Ecoregion. It contains undulating glacial drift plains with lakes and small, sinuous streams, with an irregularly shaped shoreline. It is characterized by many bays and some cliffs. Surface material deep well drained, gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and some red alder. Mean temperature ranges from 35/44° (winter) to 52/75° (summer).

Counties

Mason	(85%)
Thurston	(15%)

Primary Towns and Cities

Shelton

Tribal Reservation Lands

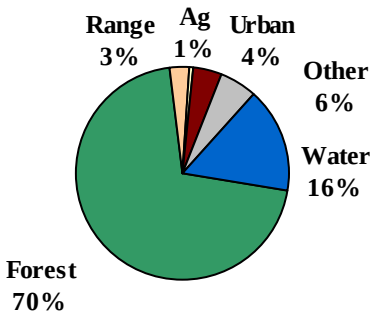
Squaxin Island Tribe

Special Purpose Districts

Mason Conservation District

Thurston Conservation District

Land Use in the Kennedy Basin



Land Base (in acres)

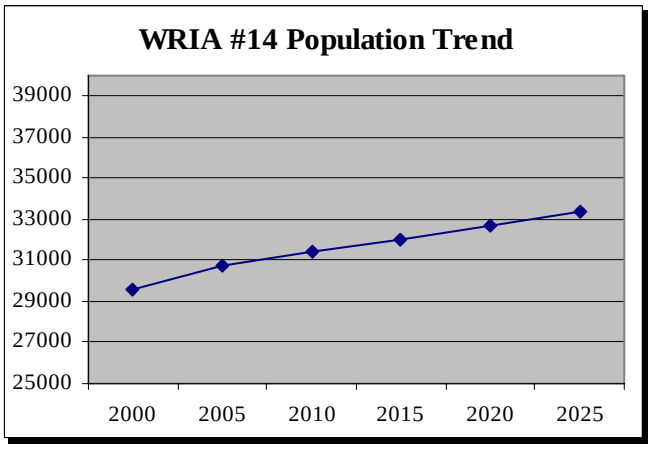
Federal	0	0%
State	13,523	5.5%
Local	0	0%
Tribal	1,643	.7%
Private	228,978	93.8%

Principal Economic Activities (as total wages)

Agriculture/Forestry	4%
Manufacturing	17%
Retail Trade	17%
Services	18%
Government	29%
Other	15%

Population

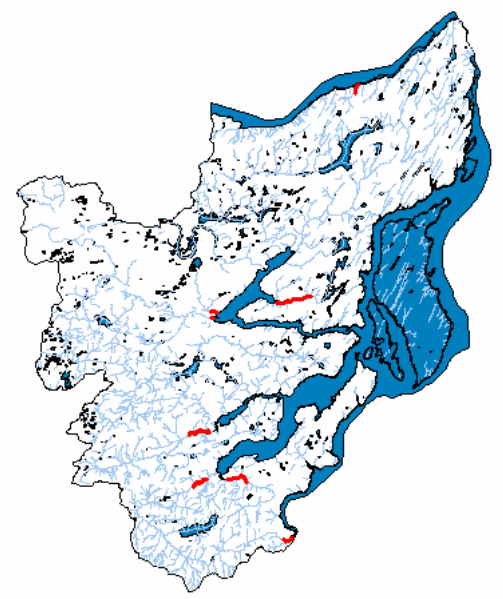
There are approximately 30,171 people living in the Kennedy-Goldsborough Basin. The primary population center is Shelton. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #14

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Burns Creek, Campbell Creek, Case Inlet, Dana Passage, Goldsborough Creek, Great Bend/Lynch Cove, Hammersley Inlet, Happy Hollow Creek, North Bay and Oakland Bay shellfish areas, Pierre Creek, Shelton Creek, Shelton Harbor, Skookum Creek, Uncle John Creek

Dissolved Oxygen in Case Inlet, Dana Passage, Great Bend/Lynch Cove, and Hood Canal

pH in Burns Creek, Great Bend/Lynch Cove, Kennedy Creek, Lynch Cove, Peale passage, Perry Creek, Pickering passage, Pierre Creek, Schneider Creek, Squaxin passage, Twanoh Falls Creek, and Unnamed Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >5mg/L

Pesticides – Have been detected in wells

Sole Source Aquifer

None

Water Quantity

Flows set, adequacy of flow level not determined; Medium growth

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

15.87 shoreline miles prohibited

12.17 shoreline miles conditionally approved

113.93 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #14

1. Oakland Bay Watershed Management Plan, Mason County
2. Totten/Little Skookum Watershed Action Plan, Mason County Health
3. Onsite Sewage System Operation & Maintenance Program, Mason County Health
4. Water Quality Monitoring Program, Mason County Health
5. Wellhead Protection, Mason County Health
6. Mason Matters, Mason County Health
7. Mason County Critical Resource Ordinance, Mason County Community Development
8. Mason County Shoreline Master Program, Mason County Community Development
9. Mason County Comprehensive Plan, Mason County Community Development

10. Mason County Watershed Management Plan, Mason County Community Development
11. Mason County Threatened Area Response Strategy, Mason County Health
12. Salmon Enhancement Program, Puget Sound Salmon Enhancement Group
13. Totten/Little Skookum Nonpoint Source Follow-up Project, Mason County Health
14. Closure Response Strategy, Mason County Health Recreation Shellfish Program, Mason County Health
15. TMDL Response Strategy, Mason County Health
16. Eld Inlet Watershed Action Plan, Thurston County
17. Kennedy Creek Watershed Analysis
18. Lower Hood Canal Watershed Management Plan, Multi-Agency
19. Lower Hood Canal Sanitary Survey, Mason County Health
20. Oakland Bay & Hammersley Inlet Nearshore Inventory, Squaxin Island Tribe/Taylor Shellfish
21. Shoreline Habitats of Hood Canal & Eastern San Juan de Fuca Assessment, UW/ Port Gamble S'Klallam Tribe
22. Puget Sound Indicator Project (PSH 2002), PSAWQT
23. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
24. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
25. Digital Coastal Atlas, DOE
26. Estuarine Health Indicator Project, PSAT
27. Biotoxins Monitoring Program, DOH
28. Commercial Shellfish Growing Area Classification Program, DOH
29. Recreational Shellfish Program, DOH
30. Puget Sound Work Plan grant, Mason CD
31. Conservation Reserve Enhancement Program (CREP), Mason CD
32. South Sound Water Quality Program, Thurston CD
33. Farm Planning Program, Thurston CD
34. Water Quality Education Program, Thurston CD
35. Farm/Dairy Nutrient BMP Implementation Program, Thurston CD
36. Septic O&M Program, Thurston County Health
37. Ambient Monitoring Program, Thurston County Health
38. North County Groundwater Program, Thurston County Health
39. Business Pollution Prevention Program, Thurston County Health

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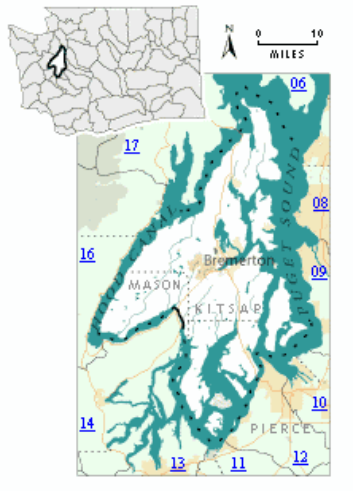
Kitsap Basin - WRIA #15



WRIA #15 encompasses nearly 631,136 acres and is located within the central Puget Sound ecoregion. The shoreline is irregularly shaped with its numerous peninsulas, islands, bays and inlets. The landscape includes undulating glacial drift plains with lakes and small, sinuous streams. Surface material is glacial till deposited during the Vashon Glaciation. Underlying materials include stratified clays, sands, and some gravel. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir, and some red alder. Rainfall averages 44 inches a year. Mean temperature ranges from 35/44° (winter) to 52/75° (summer).

Counties

Kitsap (57%)	Pierce (22%)
Mason (13%)	King (8%)

Primary Towns and Cities

Bremerton	Port Orchard
Poulsbo	Gig Harbor
Silverdale	City of Bainbridge

Tribal Reservation Lands

Port Gamble S'Klallam Tribe

Suquamish Tribe

Special Purpose Districts

Kitsap Conservation District

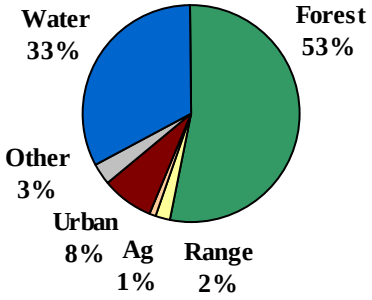
Pierce Conservation District

Mason Conservation District

King Conservation District

PUD #1 of Kitsap County

Land Use in the Kitsap Basin



Land Base (in acres)

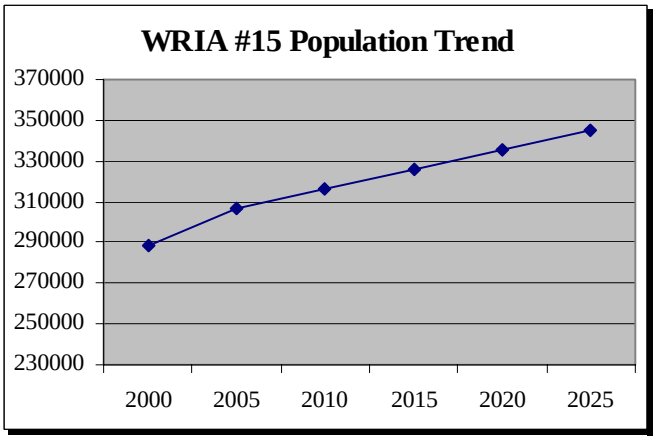
Federal	9,133	1.4 %
State	46,524	7.4%
Local	7,692	1.2%
Tribal	8,652	1.4%
Private	559,134	88.6%

Principal Economic Activities (as total wages)

Retail Trade	21%
Services	24%
Government	35%
Construction	5%
Other	15%

Population

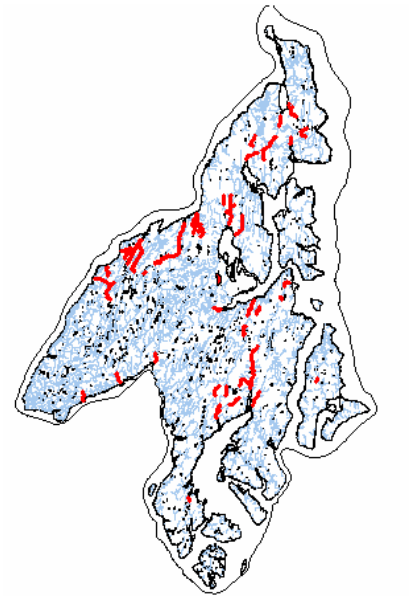
There are approximately 297,920 people living in the Kitsap Basin. This rapidly growing region is expected to have a population that exceeds 400,000 people by 2015. The primary population centers are Bremerton, Silverdale, Port Orchard, and Poulsbo. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #15

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Annapolis Creek, Barker Creek, Bear Creek, Beaver Creek, Blackjack Creek, Burley Creek, Carr Inlet, Case Inlet, Clear Creek, Dana Passage, Dogfish Creek, Dyes Inlet and Port Washington Narrows, Gamble Creek, Gorst Creek, Great Bend/Lynch Cove, Grovers Creek, Henderson Bay, Huge Creek, Kitsap Lake, Little Minter Creek, Martha-John Creek, Mayo Creek, Minter Creek, Nisqually Reach/Drayton Passage, Picnic Creek, Port Gamble Bay, Private Creek, Purdy Creek, Ravine Creek, Shoofly Creek, Sinclair Inlet, Stimson Creek, Union River, and Unnamed Creek

High Temperature in Big Beef Creek, Gamble Creek, Mayo Creek, and Miller Lake Creek

Dissolved Oxygen in Carr Inlet, Great Bend/Lynch Cove, Henderson Bay, Hood Canal, and Quartermaster Harbor

pH in Case Inlet, Dana Passage, Great Bend/Lynch Cove, Lagoon Creek, Little Mission Creek, Mayo Creek, Picnic Creek, Private Creek, Unnamed Creek

Metals in, Dyes Inlet and Port Washington Narrows, Eagle Harbor, Hood Canal, Port Washington Narrows, and Sinclair Inlet

Pesticides in Agate Passage, Dyes Inlet and Port Washington Narrows, Eagle Harbor, Hood Canal, Port Gamble Bay, Port Orchard Passage, Quartermaster Harbor, Rich Passage, Sinclair Inlet and Tacoma Narrows

Organics in Dyes Inlet and Port Washington Narrows, Eagle Harbor, Hood Canal, and Sinclair Inlet

Nutrients in Kitsap Lake

PCBs in Eagle Harbor and Sinclair Inlet

Sediment Bioassay in Dyes Inlet and Port Washington Narrows, and Sinclair Inlet

Turbidity in Dogfish Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10mg/L

Pesticides – Have been detected in wells

Sole Source Aquifer

Vashon-Maury Island Aquifer

Water Quantity

Flows set, adequacy of flow levels not yet determined; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas

4.99 shoreline acres restricted

108.39 shoreline miles prohibited

6.06 shoreline miles conditionally approved

115.62 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #15

1. TMDL for Sinclair/Dyes Inlet and tributaries
2. TMDL for Gorst Creek/Dyes Inlet
3. TMDL for Union River
4. Dyes Inlet Watershed Implementation Plan, Department of Community Development (DCD)
5. Sinclair Inlet Watershed Implementation Plan, DCD
6. Upper Hood Canal Watershed Implementation Plan, DCD
7. Pollution ID & Corrections Program, Kitsap County Health/Kitsap CD
8. Business Pollution Prevention Program, Kitsap County Health
9. Trend Water Quality Monitoring Program (SSWM), Kitsap County Health
10. Septic Operation and Maintenance Program, Kitsap County Health District
11. Kitsap County Health District Public Outreach and Education
12. Stream Team, Kitsap DCD
13. Wellhead Protection Program, Kitsap County Health
14. Boater Waste Control Program, Kitsap County Health
15. Swimming Beach Monitoring Program, Kitsap County Health
16. Stormwater System Screening Program, Kitsap Public Works
17. Puget Sound Naval Shipyard Project ENVVEST, DOE/EPA/PSNS
18. Bainbridge Island Nearshore Assessment, City of Bainbridge Island
19. Kitsap County Shoreline Inventory, Kitsap County GIS Group
20. East Kitsap Strategy for Salmon Recovery, East Kitsap Salmon Habitat Restoration Committee/Kitsap Stream Team
21. Surface & Stormwater Management Program (SSWM), Kitsap County
22. Agricultural & Natural Resource Program, Kitsap CD
23. Shoreline Habitats of HC &Eastern SJdF Assessment, UW/ Port Gamble S'Klallam Tribe
24. Puget Sound Indicator Project, 2002, PSAT
25. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
26. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
27. Digital Coastal Atlas, DOE
28. Estuarine Health Indicator Project, PSAT
29. Biotoxins Monitoring Program, DOH
30. Commercial Shellfish Growing Area Classification Program, DOH
31. Recreational Shellfish Program, DOH
32. Conservation Reserve Enhancement Program, Mason CD
33. Implementation Grant Program, Mason CD
34. Stream Team, Pierce CD
35. Small Farm Planning Program, Pierce CD
36. Dairy Waste Management Program, Pierce CD
37. Shellfish Watershed Protection Project, Tacoma/Pierce County Health

38. Shellfish Protection Program, Tacoma/Pierce County Health
39. Household Hazardous Waste Education Program, Tacoma/Pierce County Health
40. Onsite Sewage Program, Tacoma/Pierce/Kitsap County Health
41. Lower Hood Canal Watershed Management Plan, Mason County Public Works
42. Lower Hood Canal Sanitary Survey, Mason County Health
43. Onsite Sewage System Operation & Maintenance Program, Mason County Health
44. Water Quality Monitoring Program, Mason County Health
45. Wellhead Protection, Mason County Health
46. Mason Matters, Mason County Health
47. Mason County Critical Resource Ordinance, Mason County Community Development
48. Mason County Shoreline Master Program, Mason County Community Development
49. Mason County Comprehensive Plan, Mason County Community Development
50. Mason County Watershed Management Plan, Mason County Community Development
51. Mason County Threatened Area Response Strategy, Mason County Health
52. Salmon Enhancement Program, Puget Sound Salmon Enhancement Group
53. Nonpoint Pollution Identification Project, Mason County Health
54. Shellfish Closure Response Strategy, Mason County Health Department
55. Recreation Shellfish Program, Mason County Health Department
56. Lower Hood Canal Watershed Implementation Committee
57. TMDL Response Strategy, Mason County Health
58. Chico Basin Watershed Plan, DNR
59. Key Peninsula/Gig Harbor/Islands TMDL Watershed Plan, Pierce County Water Program
60. Key Peninsula/Gig Harbor/Islands Watershed Council, Pierce County
61. Gig Harbor Basin Plan, Pierce County Water Program
62. Gig Harbor Community Plan, Pierce County Planning Dept.
63. OSSS Operation and Maintenance for King County, Public Health for Seattle and King Co.
64. NPDES for Phase II Stormwater Planning
65. Dyes Inlet/Clear Creek Watershed Action Plan.
66. Kitsap County Stormwater Comprehensive Plan
67. Bremerton Stormwater Comprehensive Plan
68. Chico Creek Watershed Alternative Analysis
69. Kitsap Refugia Study, 2003
70. Upper Union River Restoration Project, Kitsap County Health District
71. Lower Union River Restoration Study, Mason County CD, Hood Canal Salmon Enhancement Group)
72. Hood Canal Watershed Project, North Mason School District
73. Hood Canal Low Dissolved Oxygen Study, Dept. of Ecology, Hood Canal Salmon Enhancement Group, Hood Canal Coordinating Council, Puget Sound Action Team, and University of Washington, Sea Grant Program

Skokomish-Dosewallips - WRIA #16

WRIA #16 is within Mason and Jefferson Counties. This 409,001-acre watershed encompasses three ecoregions: Coast Range, Cascade and Puget Lowlands. Glaciated steep higher terrain to low mountains with U-shaped valleys. High gradient streams. Gravelly loam, deep to moderately deep; some silt to silty clay loam. Potential natural vegetation is western hemlock, Douglas-fir, red alder, and at higher elevations, Pacific silver fir. Mean temperature ranges from 30/46° (winter) to 50/76° (summer).

Counties

Mason	(59%)
Jefferson	(41%)

Primary Towns and Cities

Potlach Hoodsport

Brinnon

Tribal Reservation Lands

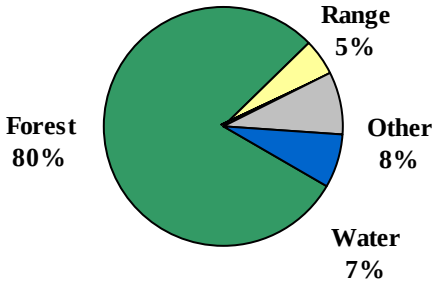
Skokomish Tribe

Special Purpose Districts

Mason Conservation District

Jefferson County Conservation District

Land Use in the Skokomish/Dosewallips



Land Base (in acres)

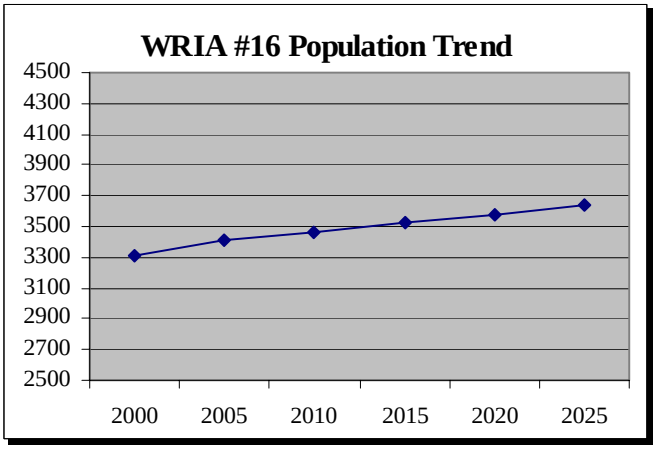
Federal	276,134	67.5%
State	32,450	7.9%
Local	0	0%
Tribal	5,055	1.4%
Private	95,360	23.3%

Principal Economic Activities (as total wages)

Government	26%
Retail Trade	23%
Services	22%
Manufacturing	14%
Forestry/Fishing	2%
Other	13%

Population

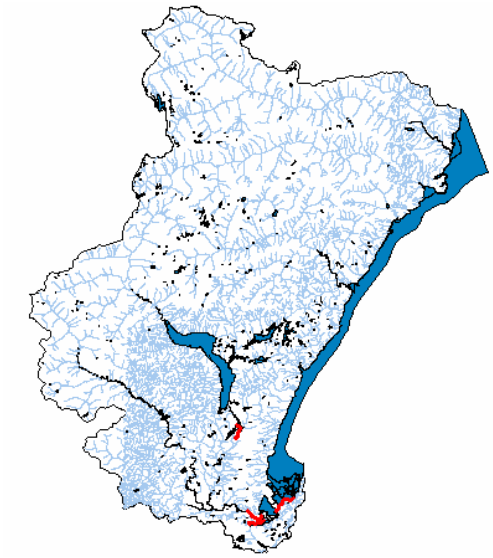
There are approximately 3,361 people living in the Skokomish-Dosewallips Basin. The primary population centers are Hoodsport and Potlatch. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #16

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Hood Canal, Hunter Creek, Purdy Creek, Skokomish River, Ten Acre Creek, and Weaver Creek

Low Instream Flow in Skokomish River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >5 mg/L

Pesticides – Have been detected in wells

Sole Source Aquifer

None

Water Quantity

Flows not set, limited growth pressure

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

5.11 shoreline miles restricted

2.64 shoreline miles prohibited

28.82 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #16

1. TMDL for Purdy Creek
2. TMDL for Skokomish River
3. TMDL for Weaver Creek
4. TMDL for Ten-Acre Creek
5. TMDL for Hunter Creek
6. Lower Hood Canal Watershed Action Plan, Mason County Health
7. Skokomish River Comprehensive Flood Hazard Management Plan, Mason County
8. South Fork Skokomish Watershed Analysis
9. US Forest Service Northwest Forest Plan
10. Shoreline Habitats of Hood Canal & Eastern San Juan de Fuca Assessment, University of Washington and Port Gamble S'Klallam Tribe
11. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
12. Puget Sound Indicator Project, 2002, PSAT
13. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
14. Salmon & Steelhead Inventory & Assessment Program, WDFW
15. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources

16. Digital Coastal Atlas, DOE
17. Estuarine Health Indicator Project, PSAT
18. Biotoxins Monitoring Program, DOH
19. Commercial Shellfish Growing Area Classification Program, DOH
20. Recreational Shellfish Program, DOH
21. Stewardship in Skokomish Watershed Project, Mason CD
22. Conservation Reserve Enhancement Program, Mason CD
23. Onsite Sewage System Operation & Maintenance Program, Mason County Health
24. Water Quality Monitoring Program, Mason County Health
25. Wellhead Protection, Mason County Health
26. Mason Matters, Mason County Health
27. Mason County Critical Resource Ordinance, Mason County Community Development
28. Mason County Shoreline Master Program, Mason County Community Development
29. Mason County Comprehensive Plan, Mason County Community Development
30. Mason County Watershed Management Plan, Mason County Community Development
31. Mason County Threatened Area Response Strategy, Mason County Health
32. Surface Water Management Plan, Jefferson County Public Works
33. State Revolving Fund Loan Program for Repair & Upgrade of On-site Sewage Systems, Jefferson County Health Environmental Health Department
34. On-Site Sewage System Education Program, Jefferson County Environmental Health Department
35. Unified Development Code Ordinance, Jefferson County Department of Community Development
36. O & M Program, Jefferson County Public Works
37. Salmon Enhancement Program, Puget Sound Salmon Enhancement Group
38. Detailed Implementation Plan for Skokomish River TMDL

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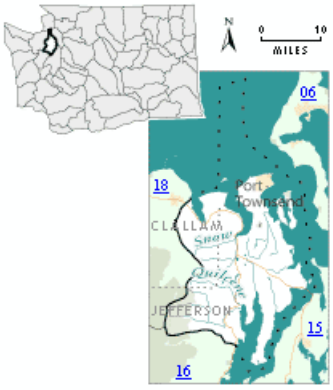
Quilcene-Snow Basin - WRIA #17



WRIA #17 encompasses nearly 400,877 acres. This watershed contains three ecoregions: Puget Lowlands, Coast Range, and the Cascades. Average rainfall is 30 inches per year. Glaciated steep higher terrain to low mountains with U-shaped valleys. High gradient streams. Gravelly loam, deep to moderately deep; some silt to silty clay loam. Potential natural vegetation is western hemlock, Douglas-fir, red alder, and at higher elevations, Pacific silver fir. Mean temperature ranges from 30/46° (winter) to 50/76° (summer).

Counties

Jefferson	(86%)
Clallam	(14%)

Primary Towns and Cities

Port Townsend	Quilcene
Port Ludlow	Chimacum
Port Hadlock	

Tribal Reservation Lands

Jamestown S'Klallam Tribe

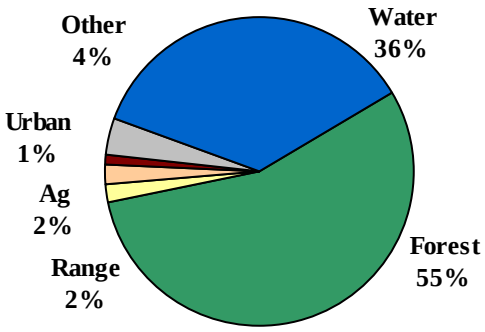
Special Purpose Districts

Jefferson Conservation District

Clallam Conservation District

Highland Irrigation District

Land use in the Quilcene/Snow Basin



Land Base (in acres)

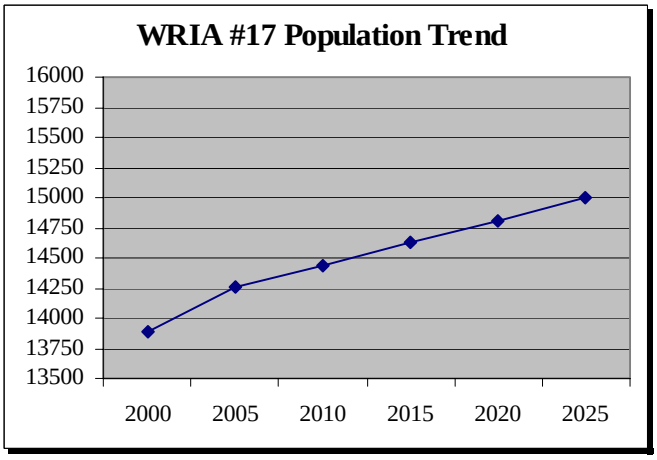
Federal	73,592	18.4%
State	38,066	9.5%
Local	0	0%
Tribal	0	0%
Private	289,217	72.1%

Principal Economic Activities (as total wages)

Government	26%
Retail Trade	23%
Services	22%
Manufacturing	14%
Forestry/Fishing	2%
Other	13%

Population

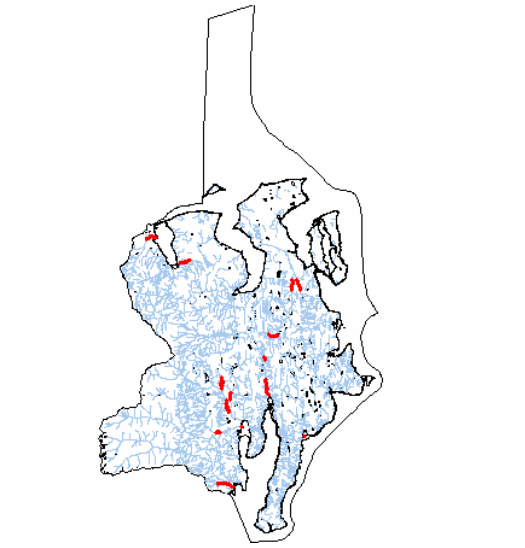
There are approximately 14,068 people living in the Quilcene-Snow Basin. The primary population center is Port Townsend. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #17

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Chicken Coop Creek, Chimacum Creek, Dabob Bay, Johnson Creek, and Quilcene Bay

High Temperature in Chimacum Creek, Donovan Creek, Leland Creek, Little Quilcene River, Ripley Creek, Tarboo Creek, and Thorndike Creek

Dissolved Oxygen in Sequim Bay

pH in Sequim Bay

Low Instream Flow in Big Quilcene River

Fish Habitat in Big Quilcene River, Jackson Creek, and Marple Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides – Have been detected in wells

Sole Source Aquifer

Marrowstone Island Aquifer

Water Quantity

Over appropriated; medium growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

10.86 shoreline miles prohibited

0.62 shoreline miles conditionally approved

111.14 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #17

1. Surface Water Management Plan, Jefferson County Public Works
2. Port Ludlow Watershed Implementation Program, Jefferson County Natural Resources Division
3. Port Ludlow Surface Water Management District, Jefferson County Public Works
4. Unified Development Code Ordinance, Jefferson County
5. O & M Program, Jefferson County
6. Sequim Bay Watershed Action Plan, Clallam County
7. Dungeness/Quilcene Water Resources Management Plan, Clallam County
8. Quilcene/Dabob Bay Watershed Implementation Program, Jefferson County Natural Resources Division
9. A Restoration Feasibility Study for the Big Quilcene River, Jefferson County
10. US Forest Service Northwest Forest Plan

11. Shoreline Habitats of Hood Canal & Eastern San Juan de Fuca Assessment, University of Washington and Port Gamble S'Klallam Tribe
12. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
13. Kelp Canopy Monitoring, WDNR
14. Puget Sound Indicator Project, 2002, PSAT
15. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
16. Salmon & Steelhead Inventory & Assessment Program, WDFW
17. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
18. Digital Coastal Atlas, DOE
19. Estuarine Health Indicator Project, PSAT
20. Biotoxins Monitoring Program, DOH
21. Commercial Shellfish Growing Area Classification Program, DOH
22. Recreational Shellfish Program, DOH
23. State Revolving Fund Loan Program for Repair & Upgrade of On-site Sewage Systems, Jefferson County Health
24. On-Site Septic System Education Program, Jefferson County Health

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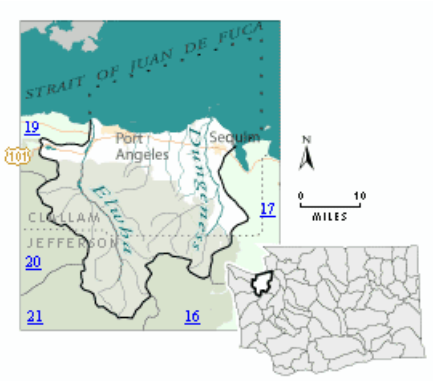
Elwha-Dungeness Basin - WRIA #18



WRIA #18 encompasses 651,288 acres. The Strait of Juan de Fuca borders the northern side of this watershed. The average annual rainfall is 52 inches per year. Rolling glacial till plains with small, low to medium gradient streams. Soils are typically moderately deep, gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, Douglas-fir and grassland. Mean temperature ranges from 36/45° (winter) to 51/64° (summer).

Counties

Clallam (82%) Jefferson (18%)

Primary Towns and Cities

Port Angeles

Sequim

Tribal Reservation Lands

Elwha Tribe

Klallam Tribe

Special Purpose Districts

Clallam Conservation District

Jefferson Conservation District

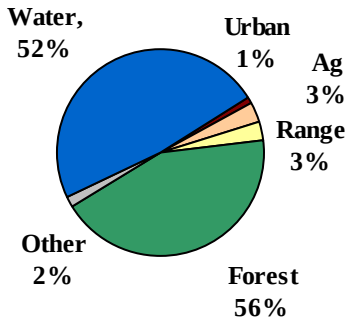
Agnew Irrigation District

Cline Irrigation District

Dungeness Irrigation District

Highland Irrigation District

Land Use in Elwha/Dungeness



Land Base (in acres)

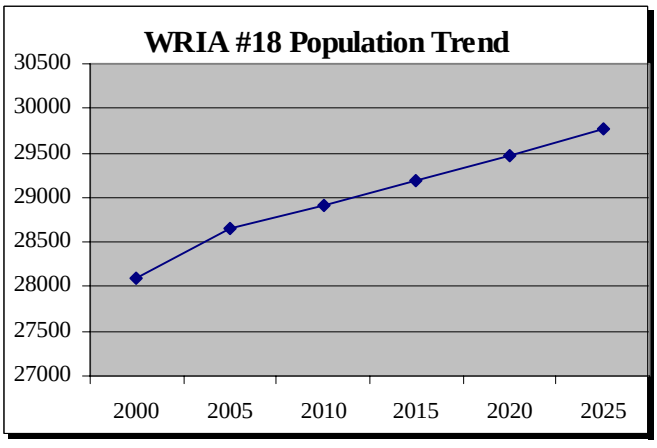
Federal	331,718	50.9%
State	27,898	4.2%
Local	1,409	<.1%
Tribal	437	.1%
Private	289,824	44.8%

Principal Economic Activities (in total wages)

Government	26%
Retail Trade	23%
Services	22%
Manufacturing	14%
Forestry/Fishing	2%
Other	13%

Population

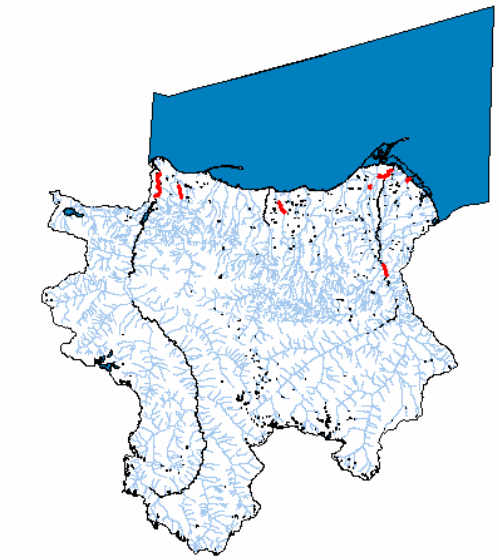
There are approximately 28,370 people living in the Elwha/Dungeness Basin. The primary population centers are Port Angeles and Sequim. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #18

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Bagley Creek, Bell Creek, Cassalery Creek, and Matriotti Creek

High Temperature in Dry Creek and Elwha River

Dissolved Oxygen in Port Angeles Harbor

Low Instream Flow in Dungeness River

PCBs in Elwha River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Over appropriated; medium growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

10.06 shoreline miles prohibited

13.43 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #18

1. TMDL for Dungeness River
2. TMDL for Dungeness Bay expansion
3. TMDL for Strait of Juan de Fuca
4. Dungeness/Quilcene Water Resource Management Plan, Clallam County
5. Dungeness River Watershed Action Plan, Clallam County
6. Dungeness River Restoration Plan
7. US Forest Service Northwest Forest Plan
8. Clallam County Septic Sense, Clallam County
9. Clallam County Water Quality Cleanup Fund, Clallam County
10. Sequim/Dungeness Aquifer Protection Plan, Clallam County

11. Stormwater Pollution Prevention, Clallam County
12. Clallam Water Quality Implementation, Clallam County CD
13. Nearshore Habitat Mapping of Central and Western Strait of Juan de Fuca, WDFW
14. Forage Fish Project, Island County Marine Resources Committee
15. Conservation Reserve Enhancement Program (CREP), Clallam CD
16. Small Farm BMP Program, Clallam CD
17. Irrigation Piping Program, Clallam CD
18. Horses for Clean Water, Clallam CD
19. Farm Plan Implementation Program, Clallam CD
20. Shoreline Habitats of Hood Canal & Eastern San Juan de Fuca Assessment, UW/ Port Gamble S'Klallam Tribe
21. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
22. Kelp Canopy Monitoring, WDNR
23. Puget Sound Indicator Project, 2002, PSAT
24. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring, Puget Sound Ambient Monitoring Program, DOH
25. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
26. Digital Coastal Atlas, DOE
27. Estuarine Health Indicator Project, PSAT
28. Biotoxins Monitoring Program, DOH
29. Commercial Shellfish Growing Area Classification Program, DOH
30. Recreational Shellfish Program, DOH
31. Surface Water Management Plan, Jefferson County Public Works

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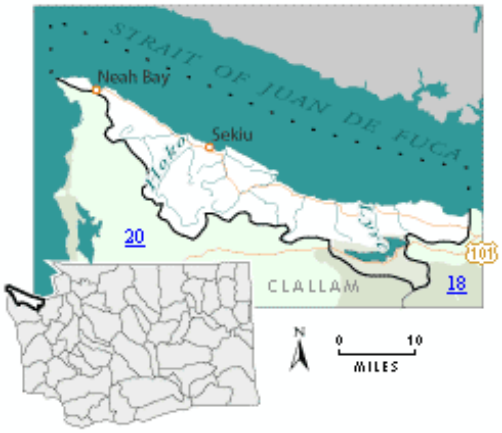
Lyre-Hoko Basin - WRIA #19



WRIA #19 encompasses 501,305 acres. This watershed is totally contained within the Coastal Range ecoregion. Average annual rainfall is 74 inches per year. Low mountains with U-shaped valleys and high gradient streams. Soils are typically gravelly loam and very gravelly loam. Potential natural vegetation is western hemlock, western red cedar, and some Douglas-fir. Mean temperature ranges from 30/45° (winter) to 48/72° (summer).

Counties

Clallam (100%)

Primary Towns and Cities

Neah Bay
Clallam Bay
Pysht
Joyce

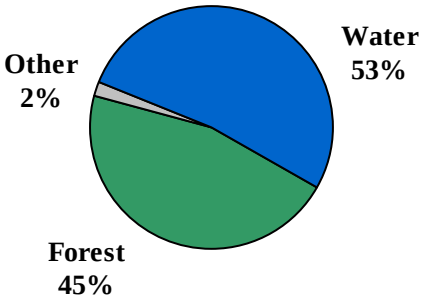
Tribal Reservation Lands

Makah Tribe

Special Purpose Districts

Clallam Conservation District

Land Use in Lyre/Hoko Basin



Land Base (in acres)

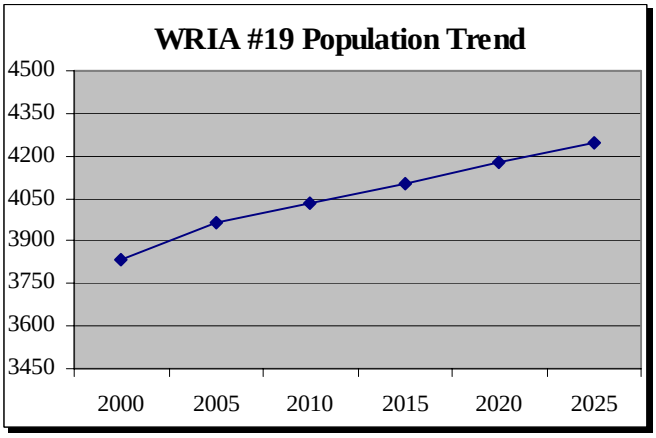
Federal	47,313	9.4%
State	55,868	11.2%
Local	219	<.01%
Tribal	9,877	2.0%
Private	388,026	77.4%

Principal Economic Activities (as total wages)

Manufacturing	11%
Retail Trade	24%
Services	23%
Government	25%
Forestry/Agriculture	2%
Other	15%

Population

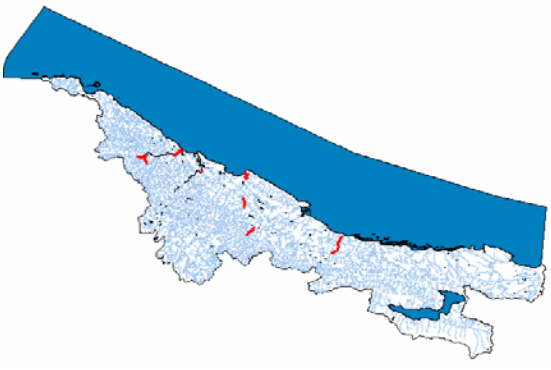
There are approximately 3,900 people living in the Lyre-Hoko Basin. The primary population centers are Neah Bay and Clallam Bay. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #19

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Clallam River, Deep Creek, Green Creek, Little Hoko River and Sekiu River

Fine Sediment in Deep Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

3.28 shoreline miles prohibited

11.37 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

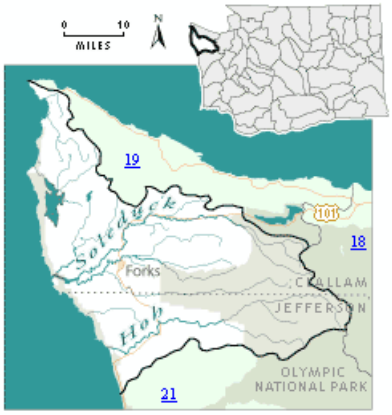
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #19

1. An assessment of physical and biological conditions within the Deep Creek Watershed, North Olympic Washington, 1995 Lower Elwha Klallam Tribe et al
2. Nearshore Habitat Mapping of Central and Western Strait of Juan de Fuca, WDFW
3. Conservation Reserve Enhancement Program (CREP), Clallam CD
4. Small Farm BMP Program, Clallam CD
5. Irrigation Piping Program, Clallam CD
6. Horses for Clean Water, Clallam CD
7. Farm Plan Implementation Program, Clallam CD
8. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
9. Kelp Canopy Monitoring, WDNR
10. Puget Sound Indicator Project (PSH 2002), PSAT
11. Fecal Coliform & Paralytic Shellfish Poisoning Monitoring (Puget Sound Ambient Monitoring Program – PSAMP), DOH
12. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
13. Digital Coastal Atlas, DOE
14. Estuarine Health Indicator Project, PSWQAT
15. Biotoxins Monitoring Program, DOH
16. Commercial Shellfish Growing Area Classification Program, DOH
17. Recreational Shellfish Program, DOH

Soleduc Basin - WRIA #20



WRIA #20 encompasses 935,250 acres. The Coastal Range and the Cascades ecoregions make up this watershed. Average annual rainfall is 111 inches per year. Coastal headlands and upland terraces with medium to high gradient streams. Typical soils are mostly deep, silt loam. Potential natural vegetation are sitka spruce, western hemlock, and western red cedar. Mean temperature ranges from 36/48° (winter) to 52/68° (summer).

Counties

Clallam (65%)

Jefferson (35%)

Primary Towns and Cities

Forks La Push

Tribal Reservation Lands

Hoh Tribe Makah Tribe

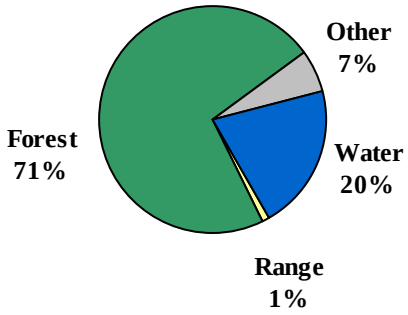
Quileute Tribe

Special Purpose Districts

Clallam Conservation District

Jefferson County Conservation District

Land Use in the Soleduc Basin



Land Base (in acres)

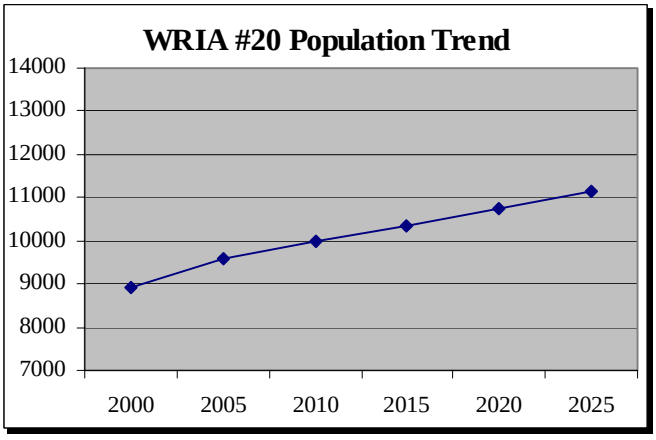
Federal	357,892	38.2%
State	137,563	14.7%
Local	0	0%
Tribal	21,704	2.3%
Private	418,090	44.7%

Principal Economic Activities (as total wages)

Manufacturing	11%
Retail Trade	24%
Services	23%
Government	25%
Forestry/Agriculture	2%
Other	15%

Population

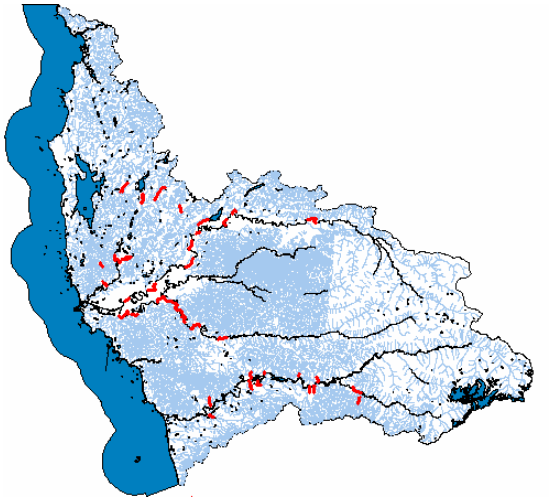
There are approximately 9,250 people living in the Soleduc Basin. The primary population center is Forks. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #20

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Alder Creek, Anderson Creek, Beaver Creek, Bogachiel River, Canyon Creek, Coal Creek, Crooked Creek, Dickey River, Elk Creek, Fisher Creek, Lake Creek , Line Creek, Maple Creek, Maxfield Creek, Nolan Creek, Owl Creek, Rock Creek, Soleduck River, Split Creek, Tower Creek, Willoughby Creek, and Winfield Creek

Dissolved Oxygen in Bogachiel River, Lake Creek, and Soleduck River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health

Commercial Shellfish Growing Areas

Undetermined

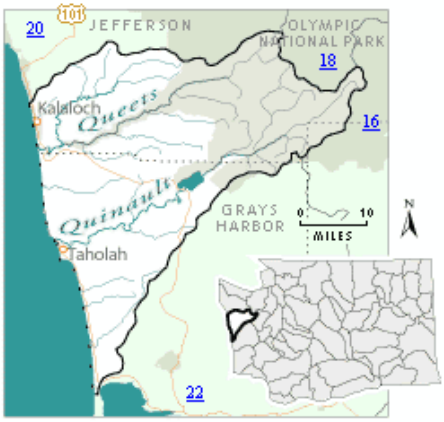
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #20

1. Dickey River Watershed Analysis, DNR
2. US Forest Service Northwest Forest Plan
3. Forage Fish Project, Island County Marine Resources Committee
4. Conservation Reserve Enhancement Program (CREP), Clallam CD
5. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
6. Kelp Canopy Monitoring, WDNR
7. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
8. Digital Coastal Atlas, DOE
9. Estuarine Health Indicator Project, PSWQAT
10. Biotoxins Monitoring Program, DOH
11. Commercial Shellfish Growing Area Classification Program, DOH
12. Recreational Shellfish Program, DOH
13. Surface Water Management Plan, Jefferson County Public Works
14. Unified Development Code Ordinance, Jefferson County
15. O & M Program, Jefferson County

Queets-Quinault Basin - WRIA #21



WRIA #21 encompasses nearly 862,104 acres. Located in the Pacific NW portion of the state, this watershed receives 134 inches of rainfall per year. The Coastal Range and Cascades make up the ecoregion for this watershed. Coastal headlands and upland terraces with medium to high gradient streams. Typical soils are mostly deep, silt loam. Potential natural vegetation are sitka spruce, western hemlock, and western red cedar. Mean temperature ranges from 36/48° (winter) to 52/68° (summer).

Counties

Jefferson	(56%)	Grays Harbor	(43%)
Mason	(<1%)		

Primary Towns and Cities

Ocean City	Moclips
Taholah	Kalaloch

Tribal Reservation Lands

Quinault Tribe

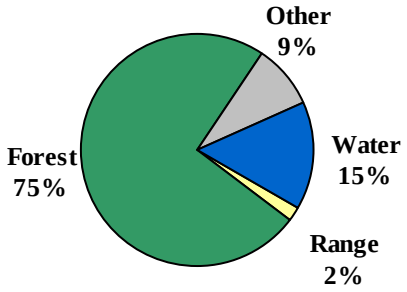
Special Purpose Districts

Jefferson Conservation District

Grays Harbor Conservation District

Mason Conservation District

Land Use in the Queets Basin



Land Base (in acres)

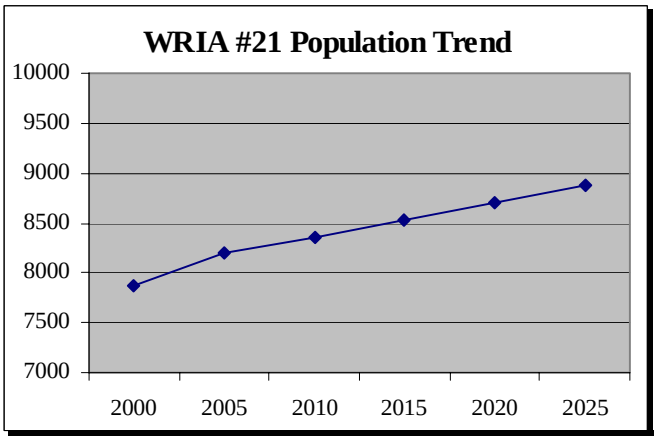
Federal	321,817	37.3%
State	113,069	13.1%
Local	7,955	0.9%
Tribal	203,781	23.6%
Private	215,532	25.0%

Principal Economic Activities (as total wages)

Manufacturing	11%
Retail Trade	24%
Services	23%
Government	25%
Forestry/Agriculture	2%
Other	15%

Population

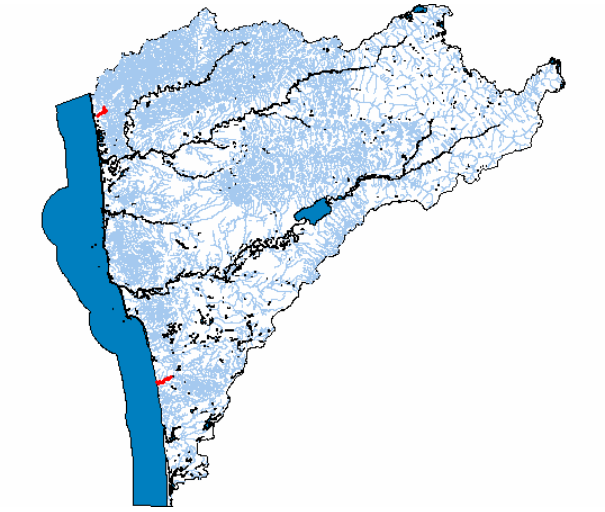
There are approximately 8,028 people living in the Queets-Quinault Basin. The primary population centers are Ocean City and Moclips. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #21

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Joe Creek

High Temperature in Kalaloch Creek

Dissolved Oxygen in Joe Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

0.83 shoreline miles prohibited

17.87 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

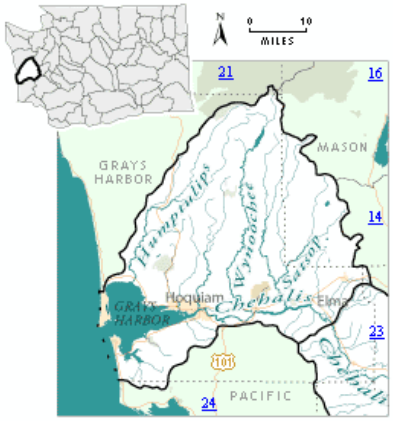
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #21

1. US Forest Service Northwest Forest Plan
2. Forage Fish Project, Island County Marine Resources Committee
3. Conservation Reserve Enhancement Program (CREP), Clallam CD
4. NWSC Nearshore Habitat Inventory & Evaluation, Northwest Straits Commission
5. Kelp Canopy Monitoring, WDNR
6. Washington State ShoreZone Inventory, DNR/Coastal & Ocean Resources
7. Digital Coastal Atlas, DOE
8. Estuarine Health Indicator Project, PSWQAT
9. Biotoxins Monitoring Program, DOH
10. Commercial Shellfish Growing Area Classification Program, DOH
11. Recreational Shellfish Program, DOH
12. Surface Water Management Plan, Jefferson County Public Works

Lower Chehalis Basin - WRIA #22



WRIA #22 encompasses about 940,005 acres. Bordering the Pacific Ocean, this watershed is part of the Coast Range and Puget Lowland ecoregions. Average rainfall is 98 inches per year. This basin contains a marine estuary, terraces, sand dunes, and spits, and is characterized by low, rolling hills and undulating glacial drift plains. Soils are typically deep silt loam to gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, and Douglas-fir. Mean temperature ranges from 31/46° (winter) to 50/76° (summer).

Counties

Grays Harbor	(84%)	Mason	(15%)
Jefferson	(<1%)	Thurston	(<1%)
Pacific	(<1%)		

Primary Towns and Cities

Aberdeen	Hoquiam
Montesano	Elma
Ocean Shores	Westport

Tribal Reservation Lands

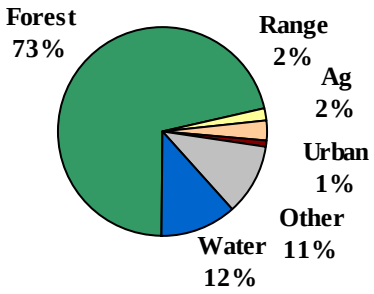
None

Special Purpose Districts

Grays Harbor Conservation District

Mason Conservation District

Land use in the Lower Chehalis



Land Base (in acres)

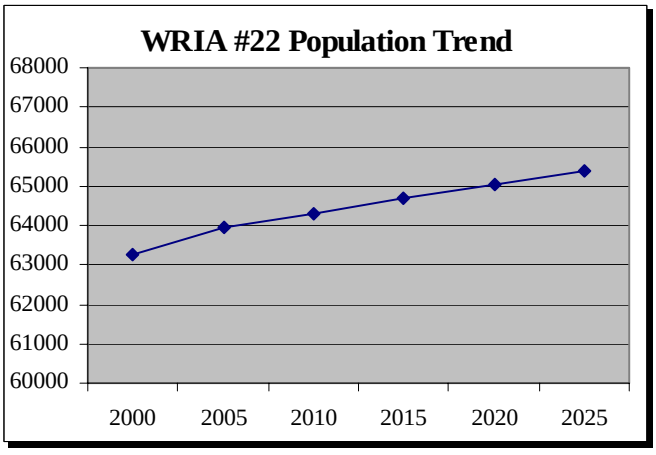
Federal	127,817	13.6%
State	26,324	2.8%
Local	35,078	3.7%
Tribal	0	0%
Private	750,784	79.9%

Principal Economic Activities (as total wages)

Agriculture/Forestry	3%
Manufacturing	20%
Retail Trade	21%
Services	21%
Government	21%
Other	14%

Population

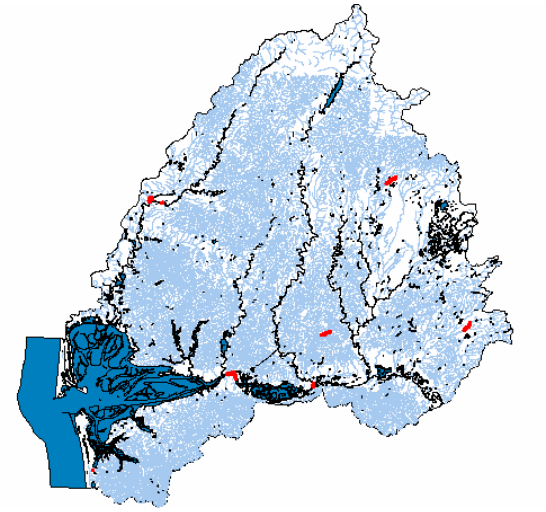
There are approximately 63,611 people living in the Lower Chehalis Basin. The primary population centers are Aberdeen, Hoquiam, and Montesano. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #22

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Chehalis River and Grays Harbor

High Temperature in Black Creek, Chehalis River, Humptulips River, Rabbit Creek, Wildcat Creek, and Wynoochee River

Pesticides in Grays Harbor County Drainage Ditch #1

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows set inadequate; need to be increased

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

26.86 shoreline miles prohibited

21.17 shoreline miles conditionally approved

14.27 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #22

1. TMDL for Grays Harbor
2. TMDL for Duck Lake
3. TMDL for Wildcat Creek
4. TMDL for Rabbit Creek
5. US Forest Service Northwest Forest Plan
6. Chehalis River Basin Watershed Action Plan, 1992, Lewis CD
7. West Satsop Watershed Analysis, 1995 Weyerhaueser/Simpson
8. Chehalis River Basin Fishery Resources: Status, Trends, and Restoration Goals, 1992, USFWS
9. Model Watershed Project, Grays Harbor
10. Kelp Canopy Monitoring, WDNR
11. Washington State Shore Zone Inventory, DNR/Coastal & Ocean Resources
12. Digital Coastal Atlas, DOE
13. Estuarine Health Indicator Project, PSWQAT
14. Biotoxins Monitoring Program, DOH
15. Commercial Shellfish Growing Area Classification Program, DOH
16. Recreational Shellfish Program, DOH
17. Chehalis Watershed Restoration Project, Mason CD

18. Conservation Reserve Enhancement program, Mason CD
19. Dairy Nutrient Program, Grays Harbor CD
20. Grays Harbor Water Quality Program, Grays Harbor CD
21. Conservation Reserve Enhancement Program (CREP), Grays Harbor CD
22. Onsite Sewage System Operation & Maintenance Program, Mason County Health
23. Water Quality Monitoring Program, Mason County Health
24. Wellhead Protection, Mason County Health
25. Mason Matters, Mason County Health
26. Mason County Critical Resource Ordinance, Mason County Community Development
27. Mason County Shoreline Master Program, Mason County Community Development
28. Mason County Comprehensive Plan, Mason County Community Development
29. Mason County Watershed Management Plan, Mason County Community Development
30. Mason County Threatened Area Response Strategy, Mason County Health
31. Salmon Enhancement Program, Puget Sound Salmon Enhancement Group

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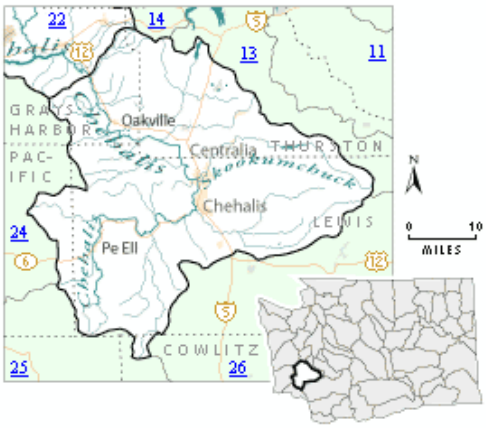
Upper Chehalis Basin - WRIA #23



WRIA #23 encompasses nearly 830,730 acres. Part of the Coastal Range, Puget Lowlands, and Cascades ecoregions, this watershed receives about 57 inches of rainfall per year. Low, rolling hills, terraces, and floodplains in the lower basin, U-shaped glaciated valleys in the east. Typical soils are deep silt loam to gravelly clay loam, sandy loam, and cobbly loam. Mean temperature ranges from 31/41° (winter) to 47/78° (summer).

Counties

Lewis	(60%)	Thurston	(24%)
Cowlitz	(1%)	Pacific	(4%)
Grays Harbor	(11%)		

Primary Towns and Cities

Centralia	Chehalis
Tenino	Napavine
Pe Ell	Bucoda

Tribal Reservation Lands

Chehalis Confederated Tribes

Special Purpose Districts

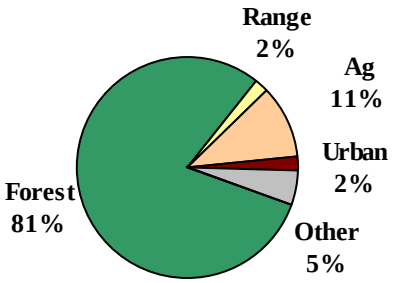
Lewis County Conservation District

Thurston Conservation District

Grays Harbor Conservation District

Pacific Conservation District

Land use in the Upper Chehalis



Land Base (in acres)

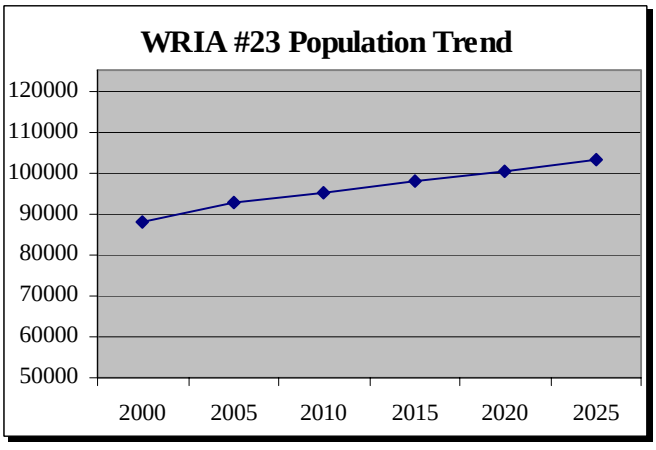
Federal	607	.1%
State	163,481	19.6%
Local	35	<.1%
Tribal	4,306	.5%
Private	662,298	79.7%

Principal Economic Activities (as total wages)

Agriculture/Forestry	4%
Manufacturing	18%
Retail Trade	23%
Services	18%
Government	19%

Population

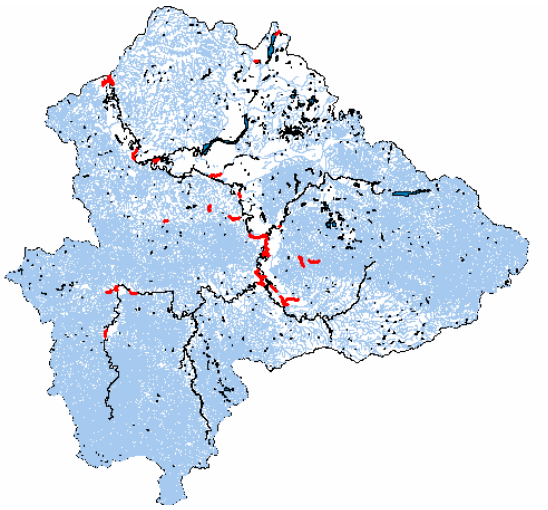
There are approximately 90,387 people living in the Upper Chehalis Basin. The primary population centers are Centralia, Chehalis, and Tenino. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #23

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Berwick Creek, Chehalis River, Demsey Creek, Dillenbaugh Creek, Elk Creek, Lincoln Creek, Newaukum River, Salzer Creek, Scatter Creek and Skookumchuck River

High Temperature in Black River, Chehalis River, Dillenbaugh Creek, Lincoln Creek, Newaukum River, Salzer Creek, Scatter Creek and Skookumchuck River

Dissolved Oxygen in Demsey Creek

pH in Scatter Creek and Skookumchuck River

Nutrients in Black Lake

PCBs in Chehalis River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows set inadequate; need to be increased

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #23

1. TMDL for Chehalis River
2. TMDL for Black River
3. TMDL for Lincoln Creek
4. TMDL for Scatter Creek
5. TMDL for Dillenbaugh Creek
6. TMDL for Skookumchuck Creek
7. TMDL for Salzar Creek
8. TMDL for Newaukum River
9. Chehalis River Basin Fishery Resources: Status, Trends, and Restoration Goals, 1992, USFWS
10. Animal Waste Management, Lewis CD
11. On-site Sewage Technical Assistance, Lewis County Health
12. Chehalis TMDL Program, Thurston CD & Lewis CD
13. Farm Planning Program, Thurston CD
14. Water Quality Education Program, Thurston CD
15. Implementation Program, Thurston CD
16. Dairy Nutrient Management Program, Grays Harbor CD
17. Grays Harbor Water Quality Program, Grays Harbor CD
18. Conservation Reserve Enhancement Program (CREP), Grays Harbor CD/Thurston CD

19. Dairy Waste Management Program, Lewis CD
20. Conservation Reserve Enhancement Program (CREP), Lewis CD
21. Lewis County Poultry Grant Program, Lewis CD
22. TMDL Alliance Program, Lewis CD
23. Drinking Water Quality Program, Lewis County Health
24. Septic O&M Program, Thurston County Health
25. Ambient Monitoring Program, Thurston County Health
26. North County Groundwater Program, Thurston County Health
27. Business Pollution Prevention Program, Thurston County Health
28. Thurston County Poultry Program, Thurston CD
29. Dillenbaugh Creek Model Watershed Management Plan.
30. Water Quality Education Program, Thurston CD
31. Farm/Dairy Nutrient BMP Implementation Program, Thurston CD

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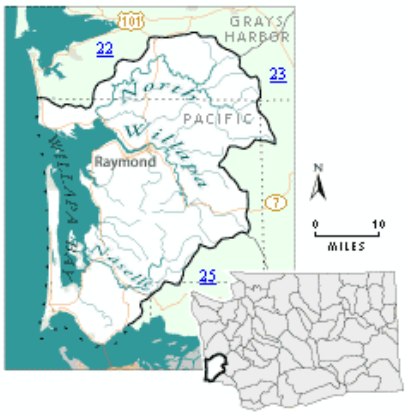
Willapa Basin - WRIA #24



WRIA #24 encompasses nearly 814,900 acres. Except for a small portion of the uplands, this watershed is part of the Coast Range ecoregion. Average annual rainfall is 84 inches per year. Coastal headlands and upland terraces with steeply sloping mountains. Medium to high gradient streams that have stable summer flow. Typical soils are deep silty clay loam to gravelly loam. Potential natural vegetation is sitka spruce, western hemlock, western red cedar, and some Douglas-fir. Mean temperature ranges from 30/50° (winter) to 50/76° (summer).

Counties

Pacific (83%) Grays Harbor (16%)

Lewis (<1%) Wahkiakum (<1%)

Primary Towns and Cities

Raymond South Bend

Long Beach Ilwaco

Tribal Reservation Lands

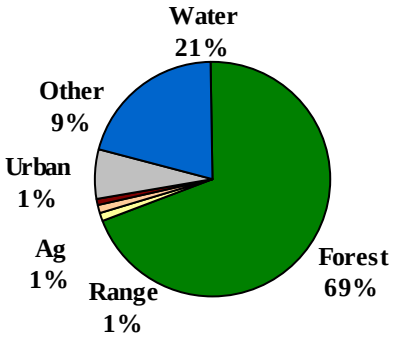
Shoalwater Bay Tribe

Special Purpose Districts

Pacific Conservation District

Grays Harbor Conservation District

Land use in Willapa Basin



Land Base (in acres)

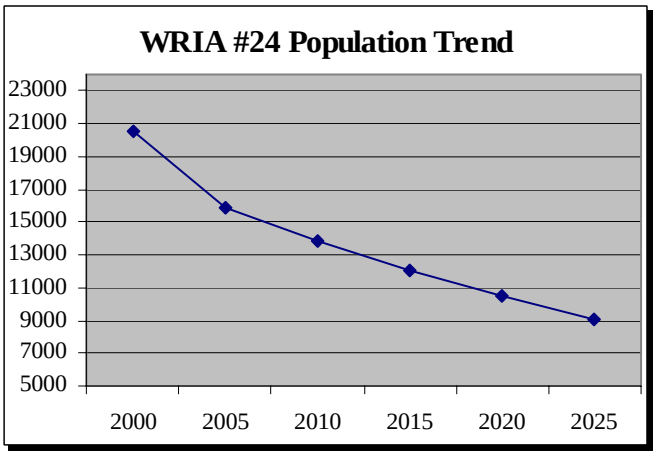
Federal	10,303	1.3%
State	77,636	9.5%
Local	1576	.2%
Tribal	340	.1%
Private	725,044	89.0%

Principal Economic Activities (as total wages)

Forestry/Fishing	7%
Manufacturing	20%
Retail Trade	20%
Services	18%
Government	26%
Other	9%

Population

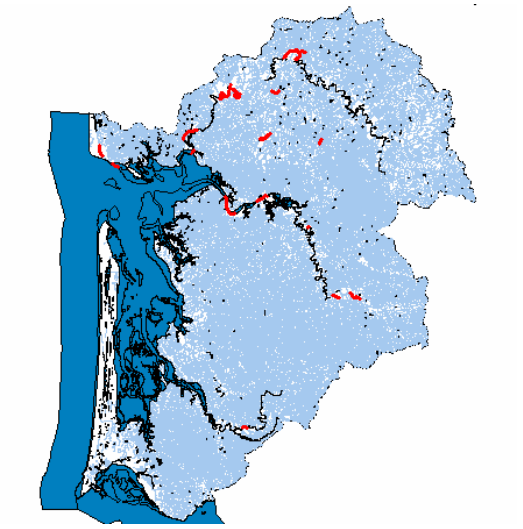
There are approximately 18,219 people living in the Willapa Basin. The primary population centers are Raymond and South Bend. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #24

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Columbia River, Grayland Ditch, North River, Willapa Bay, and Willapa River

High Temperature in Elkhorn Creek, Fork Creek, Joe Creek, Little North River, Naselle River, North River, Upper Salmon Creek, Smith Creek, Unnamed Creek (tributary to the North River), and Willapa River

Dissolved Oxygen in Grayland Ditch and Willapa River

Pesticides in Pacific County Drainage Ditch NO. 1

PCBs in Columbia River

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

11.26 shoreline miles prohibited

26.14 shoreline miles conditionally approved

81.22 shoreline miles approved

For possible changes, please see

http://www.doh.wa.gov/ehp/sf/grow.htm

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #24

1. TMDL for Willapa River
2. Little North River Watershed Analysis, 1995, Weyerhaeuser
3. Willapa Bay Water Resources Coordinating Council Information Clearinghouse, Pacific County
4. North Pacific County Infrastructure Action Team-Economic Development and Water Quality concerns
5. Dairy Farm Plans and Manure Management Programs, Pacific CD
6. Cranberry Program, Pacific CD
7. Kelp Canopy Monitoring, WDNR
8. State ShoreZone Inventory, DNR/Coastal & Ocean Resources
9. Digital Coastal Atlas, DOE
10. Estuarine Health Indicator Project, PSAT
11. Biotoxins Monitoring Program, DOH

12. Commercial Shellfish Growing Area Classification Program, DOH
13. Recreational Shellfish Program, DOH
14. Long Beach Groundwater Survey, Pacific County Health
15. Wells Permitting Program, Pacific County Health
16. Skating Lake Project, WA Department of Transportation

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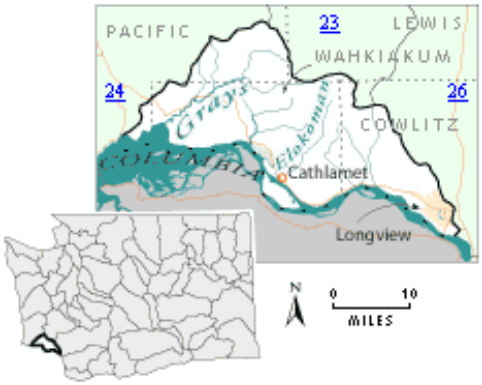
Grays-Elochoman Basin - WRIA #25



WRIA #25 encompasses nearly 323,097 acres and is located along the Lower Columbia River. The majority of this watershed is in the Coast Range ecoregion. This basin contains coastal headlands and upland terraces and is characterized by low, rolling hills and undulating glacial drift plains. Soils are typically deep silt loam to gravelly sandy loam. Potential natural vegetation is western hemlock, western red cedar, and Douglas-fir. Average annual rainfall is 80 inches per year. Mean temperature ranges from 31/46° (winter) to 50/76° (summer).

Counties

Wahkiakum	(56%)	Cowlitz	(26%)
Pacific	(17%)	Lewis	(1%)

Primary Towns and Cities

Longview

Cathlamet

Altoona

Tribal Reservation Lands

None

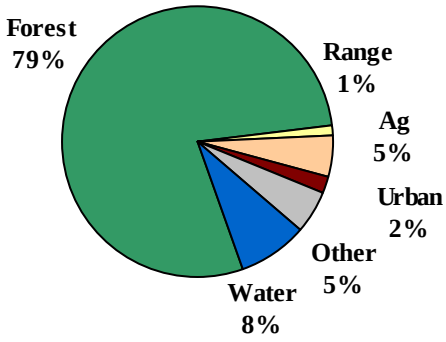
Special Purpose Districts

Wahkiakum Conservation District

Cowlitz Conservation District

Pacific Conservation District

Land use in Grays/Elochoman



Land Base (in acres)

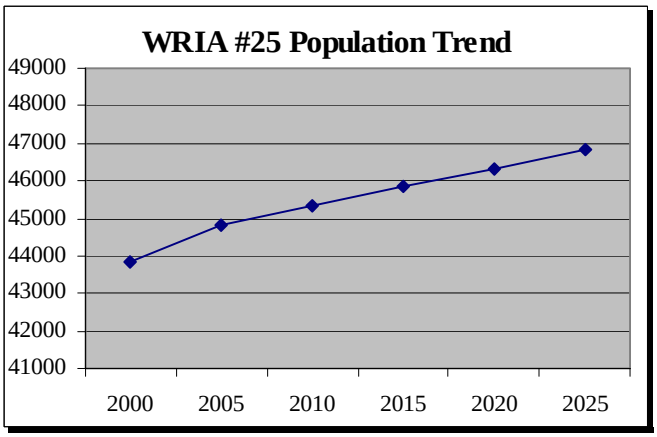
Federal	2,483	.7%
State	51,958	16.2%
Local	0	0%
Tribal	0	0%
Private	268,141	83.1%

Principal Economic Activities (as total wages)

Agriculture/Forestry	7%
Manufacturing	23%
Retail Trade	16%
Services	14%
Government	32%
Other	8%

Population

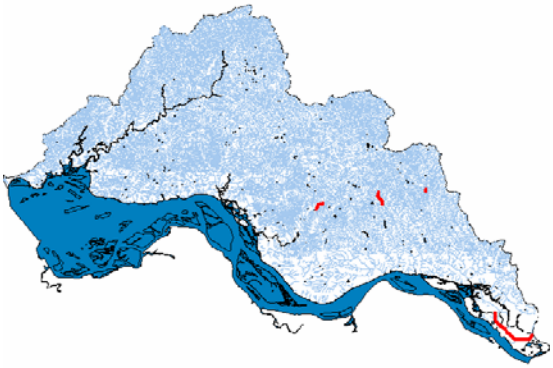
There are approximately 44,331 people living in the Grays-Elochoman Basin. The primary population center is Longview. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #25

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Columbia River and Longview Ditches

High Temperature in Abernathy Creek, Columbia River, Elochoman River, Germany Creek, and Grays River

Dissolved Oxygen in Columbia River and Longview Ditches

Metals in Longview Ditches

Pesticides in Columbia River and Sacajawea Lake

PCBs in Columbia River and Sacajawea Lake

Total Dissolved Gas in Columbia River

Turbidity in Longview Ditches

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

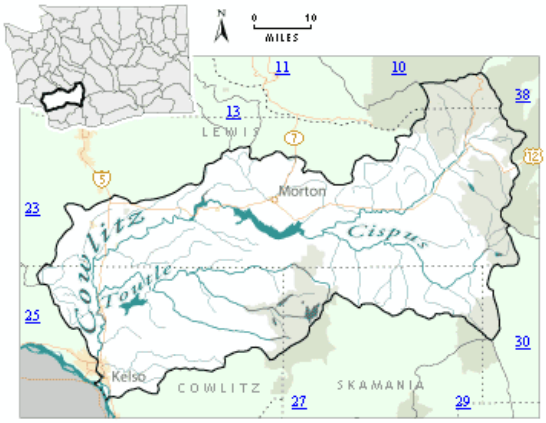
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #25

1. TMDL for Longview Ditches
2. Conservation Reserve Enhancement Program (CREP), Wahkiakum CD
3. Dairy Waste Nutrient Management Program, Wahkiakum CD
4. Water Quality Implementation Program, Wahkiakum CD
5. Continuous CRP, Wahkiakum CD
6. BMP Watershed Planning Program, Wahkiakum CD
7. Watershed BMP Design & Implementation Program, Wahkiakum CD
8. Onsite Sewage Program, Wahkaikum County Health

Cowlitz Basin - WRIA #26



WRIA #26 encompasses nearly 1,594,790 acres. The upper watershed is part of the Cascade ecoregion, The lower portion is in the Puget Lowlands. Glaciated valleys, ranging from U-shaped to steep, dissected mountains. Streams are high to medium gradient. Soils are typically deep clay loam, silt loam, gravelly loam, and cobbly loam. Potential natural vegetation is western hemlock, western red cedar, Pacific silver fir, some Douglas-fir and some noble fir. Average annual rainfall is 72 inches per year. Mean temperature ranges from 26/41° (winter) to 44/78° (summer).

Counties

Lewis	(57%)	Cowlitz	(27%)
Skamania	(13%)	Pierce	(2%)
Yakima	(1%)		

Primary Towns and Cities

Kelso	Castle Rock	Morton
Winlock	Toledo	Mossyrock

Tribal Reservation Lands

None

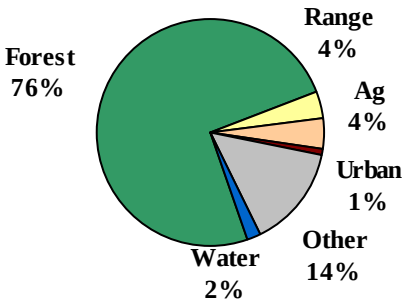
Special Purpose Districts

Lewis County Conservation District

Cowlitz Conservation District

Underwood Conservation District

Land use in the Cowlitz Basin



Land Base (in acres)

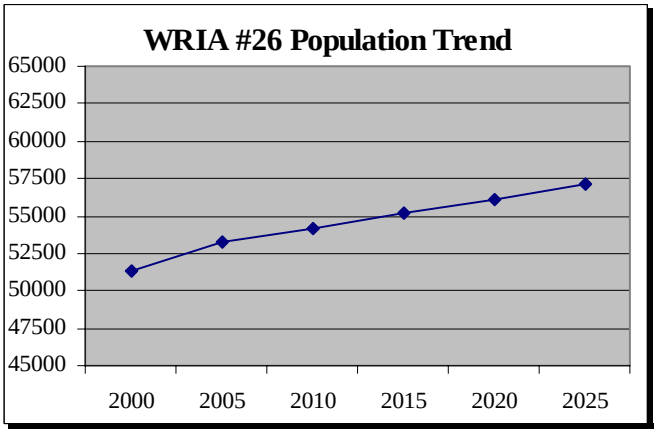
Federal	685,510	43.0%
State	78,319	4.9%
Local	120	<.01%
Tribal	94	0.1%
Private	829,745	52.0%

Principal Economic Activities (as total wages)

Manufacturing	27%
Retail Trade	19%
Services	20%
Government	14%
Construction	7%
Other	13%

Population

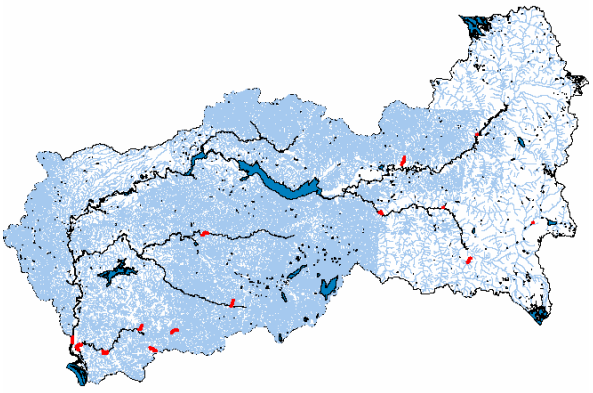
There are approximately 52,298 people living in the Cowlitz Basin. The primary population centers are Kelso and Castle Rock. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #26

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Baird Creek, Cispus River, Coweeman River, East Canyon Creek, Goble Creek, Green River, Herrington Creek, Iron Creek, Mulholland Creek, Silver Creek, and Willamete Creek

Pesticides in Cowlitz River

Organics in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 10mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; growth pressure

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

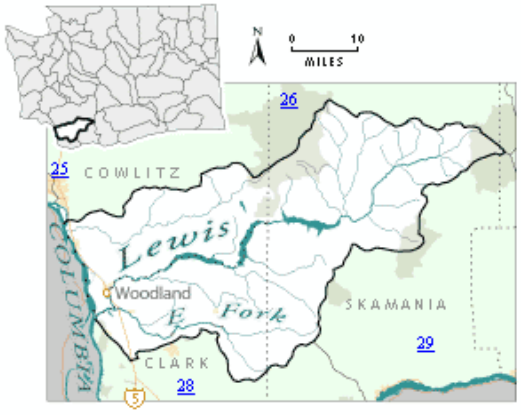
Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #26

1. U.S. Forest Service Northwest Forest Plan
2. Silver Lake Phase II Restoration
3. Onsite Sewage Technical Assistance, Lewis/Wahkaikum/Pierce/Southwest County Health
4. Resource Protection Program, Southwest WA Health
5. Recreational Bathing Beaches Program, Southwest Washington Health
6. Sewage O&M Program, Southwest Washington Health
7. Dairy Waste Management Program, Lewis CD
8. Conservation Reserve Enhancement Program (CREP), Lewis CD
9. Lewis County Poultry Grant Program, Lewis CD
10. TMDL Alliance Program, Lewis CD
11. Conservation Reserve Enhancement Program (CREP), Wahkiakum CD
12. Dairy Waste Nutrient Management Program, Wahkiakum CD
13. Water Quality Implementation Program, Wahkiakum CD
14. Continuous CRP, Wahkiakum CD
15. BMP Watershed Planning Program, Wahkiakum CD
16. Watershed BMP Design & Implementation Program, Wahkiakum CD
17. Drinking Water Quality Program, Lewis County Health
18. Household Hazardous Waste Education Program, Tacoma/Pierce County Health

Lewis Basin - WRIA #27



WRIA #27 encompasses nearly 837,325 acres. The Cascades, Puget Lowlands, and Willamette Valley make up the ecoregions for this watershed. Upper basin has U-shaped glaciated valleys, lower basin has floodplains with low gradient meandering streams. Typical soil ranges from deep, silty clay loam to gravelly loam, and cobbly loam. Potential natural vegetation includes prairies, Oregon white oak, western hemlock, western red cedar, and Douglas-fir. Average rainfall is about 90 inches per year. Mean temperature ranges between 31/45° (winter) to 47/80° (summer).

Counties

Skamania (49%) Cowlitz (26%)

Clark (25%)

Primary Towns and Cities

Woodland Ridgefield Kalama

Yacolt

Tribal Reservation Lands

None

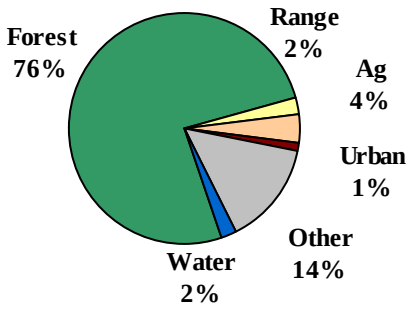
Special Purpose Districts

Cowlitz Conservation District

Clark County Conservation District

Underwood Conservation District

Land use in the Lewis Basin



Land Base (in acres)

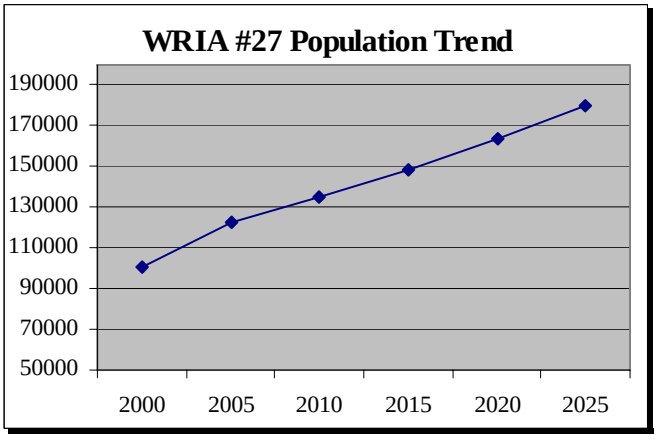
Federal	365,872	43.7%
State	89,690	10.7%
Local	721	0.1%
Tribal	0	0%
Private	381,041	45.5%

Principal Economic Activities (as total wages)

Manufacturing	20%
Retail Trade	20%
Services	22%
Government	17%
Other	11%

Population

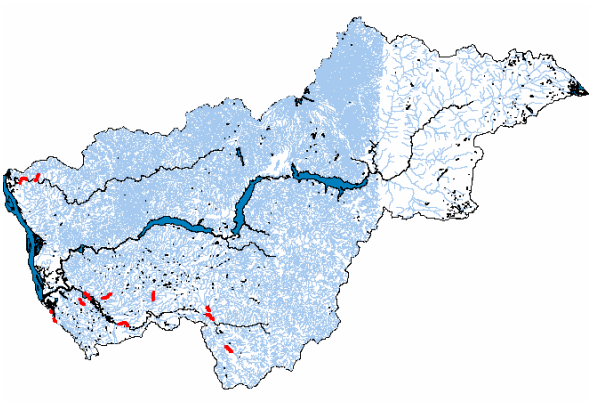
There are approximately 111,539 people living in the Lewis Basin. The primary population centers are Woodland and Ridgefield. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #27

Listed problem areas are highlighted (online).



For mapping updates see:
http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Lewis River, Lockwood Creek, McCormick Creek, Rock Creek, and Yacolt Creek

High Temperature in Columbia River, Hatchery Creek, Kalama River, Lewis River, and McCormick Creek

Pesticides in Columbia River

PCBs in Columbia River

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 5 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; growth pressure

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #27

U.S. Forest Service Northwest Forest Plan

Watershed Action Plan for East Fork Lewis River, Clark County Public Works

NPDES Phase I Stormwater Management Program, Clark County Public Works

IAC/SRFB Cedar Creek Grant, Clark County CD

DOE Salmon Creek Grant, Clark County CD

Conservation Reserve Enhancement Program (CREP), Clark County CD

Dairy Waste Grant, Clark County CD

Resource Protection Program, Southwest WA Health

Recreational Bathing Beaches Program, Southwest Washington Health

Sewage O&M Program, Southwest Washington Health

Assessment and Strategic Plan, East Fork Lewis River, 2003.

Master Plan for Port of Ridgefield.

Salmon-Washougal Basin - WRIA #28

WRIA #28 contains nearly 316,938 acres. Located along the lower Columbia River, the Willamette Valley and Cascade make up the ecoregions for this watershed. Rainfall averages 63 inches per year. Upper basin has U-shaped glaciated valleys, lower basin has floodplains with low gradient meandering streams. Typical soil ranges from deep, silty clay loam to gravelly loam, and cobbly loam. Potential natural vegetation includes prairies, Oregon white oak, western hemlock, western red cedar, and Douglas-fir. Mean temperature ranges between 31/45° (winter) to 47/80° (summer).

Primary Towns and Cities

Vancouver	Ridgefield	Washougal
Battle Ground	North Bonneville	Camas

Counties

Clark	(67%)
Skamania	(33%)

Tribal Reservation Lands

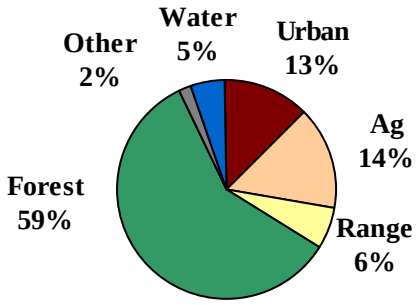
None

Special Purpose Districts

Clark County Conservation District

Underwood Conservation District

Land Use in Salmon-Washougal Basin



Land Base (in acres)

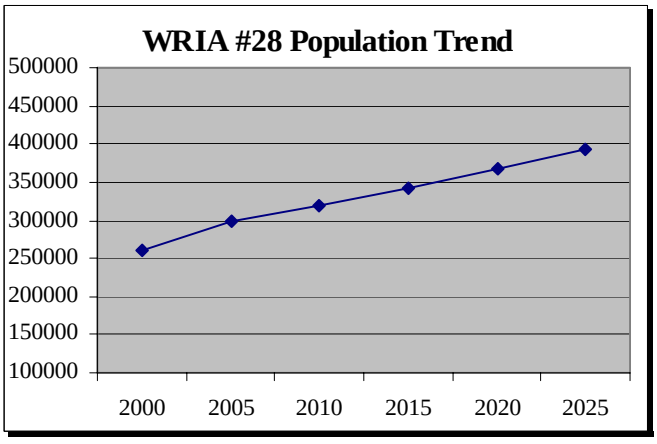
Federal	14,527	4.6%
State	60,482	19.1%
Local	1,424	.4%
Tribal	0	0%
Private	240,504	75.9%

Principal Economic Activities (as total wages)

Manufacturing	20%
Retail Trade	20%
Services	22%
Government	17%
Other	11%

Population

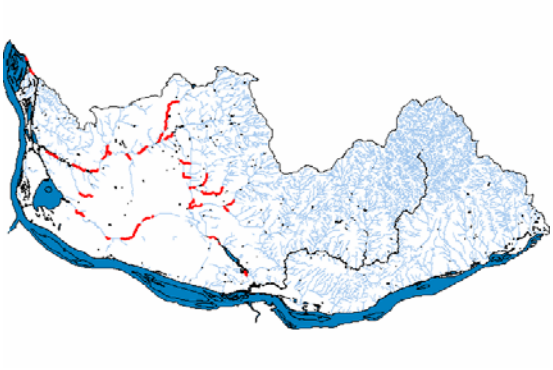
There are approximately 279,185 people living in the Salmon-Washougal Basin. The primary population centers in the basin are Vancouver, Washougal, and Camas. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #28

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Burnt Bridge Creek, Columbia River, Curtin Creek, Fifth Plain Creek, Gibbons Creek, Lacamas Creek, Lake River, Mill Creek, Salmon Creek, and Weaver Creek

High Temperature in Burnt Bridge Creek, China Ditch, China Lateral, Columbia River, Fifth Plain Creek, Lacamas Creek, Lake River, Matney Creek, Mill Ditch, Salmon Creek, and Shanghai Creek

Dissolved Oxygen in Burnt Bridge Creek, China Ditch, China Lateral, Cougar Canyon Creek, Cowpie Creek, Dwyer Creek, Fifth Plain Creek, Lacamas Creek, Matney Creek, Mill Ditch, and Shanghai Creek

pH in Burnt Bridge Creek, Dwyer Creek, Fifth Plain Creek, Lacamas Creek, Matney Creek, Mill Ditch, and Shanghai Creek

Sediment Bioassay in Columbia River and Lake River

Total Dissolved Gas in Columbia River

Turbidity in Salmon Creek

Arsenic in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 5 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; growth pressure

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

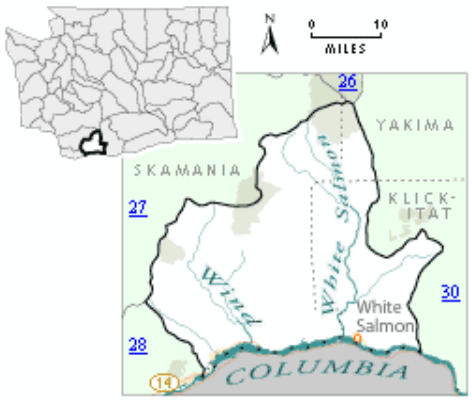
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts #28

1. TMDL for Salmon Creek
2. TMDL for Weaver Creek
3. TMDL for Gibbons Creek
4. NPDES Phase I Stormwater Management Program, Clark County Public Works
5. Dry Well Management Program, Clark County Public Works
6. Dairy Waste Grant, Clark County CD
7. Resource Protection Program, Southwest WA Health
8. Recreational Bathing Beaches Program, Southwest WA Health
9. Sewage O&M Program, Southwest WA Health
10. Sewer Connection Incentives Program, City of Vancouver.
11. Lake River Industrial Site, Water Quality Management.
12. Master Plan for the Port of Ridgefield.
13. Conservation Reserve Enhancement Program, NRCS.

Wind-White Salmon Basin -WRIA #29



WRIA #29 contains nearly 576,934 acres. This watershed is part of the Cascade and Eastern Cascade Slopes ecoregions. U-shaped glaciated valleys and steep dissected mountains with medium gradient streams. Eastern slope is low mountainous foothills. Typical soils include deep clay and silty clay loam, gravelly silt loam, and cobbly loam. Potential natural vegetation includes western hemlock, western red cedar, Pacific silver fir, Douglas-fir, noble fir, and ponderosa pine in the east. Rainfall averages 70 inches per year. Mean temperature ranges from 26/41° (winter) to 53/82° (summer).

Counties

Skamania	(65%)	Klickitat	(31%)
Yakima	(4%)		

Primary Towns and Cities

White Salmon	Stevenson	Carson
Home Valley	Hood	Trout Lake

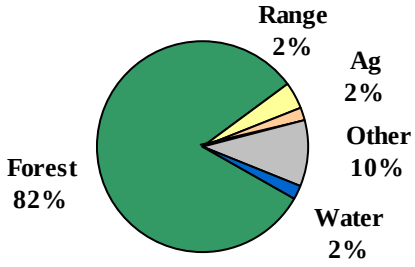
Tribal Reservation Lands

None

Special Purpose Districts

Underwood Conservation District
Central Klickitat Conservation District
South Yakima Conservation District
White Salmon Irrigation District
Bingen Irrigation District

Land use in the Wind/White Salmon Basin



Land Base (in acres)

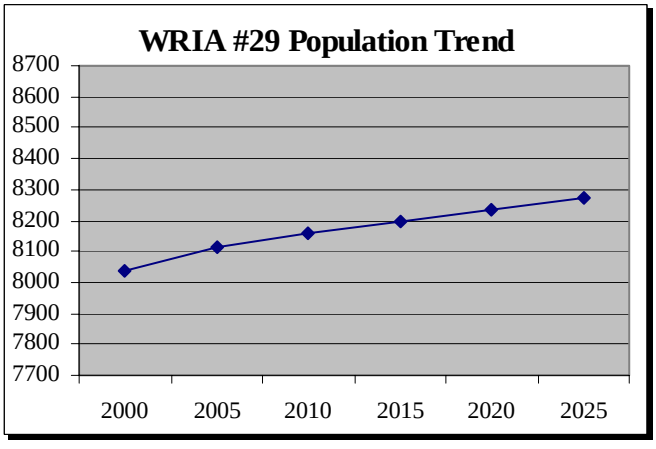
Federal	325,207	56.4%
State	76,650	13.3%
Local	0	0%
Tribal	23	<.01%
Private	175,053	30.3%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Manufacturing	14%
Retail Trade	10%
Services	26%
Government	42%
Other	6%

Population

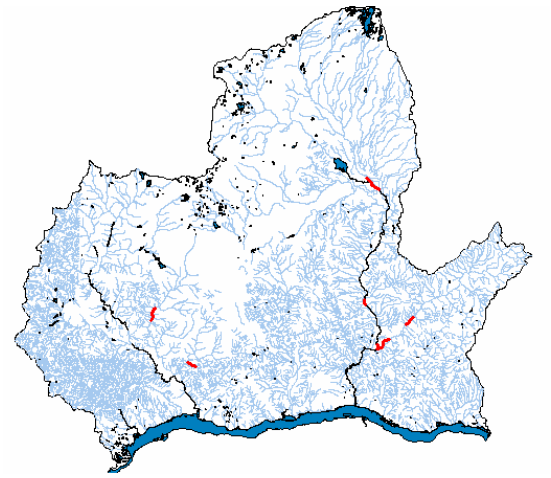
There are approximately 8,078 people living in the Wind-White Salmon Basin. The primary population center is White Salmon. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #29

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Rattlesnake Creek, Trout Lake Creek, and White Salmon River

High Temperature in Bear Creek, Eightmile Creek, Indian Creek, and Rattlesnake Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 10 mg/L

Pesticides - Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; limited growth pressure

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #29

1. TMDL for Wind River
2. White Salmon Watershed Enhancement Project, Underwood CD
3. Wind River Watershed Restoration Project, Underwood CD
4. Jewett Creek Watershed Project, Underwood CD
5. Dairy Waste System Technical & Financial Program, Underwood CD
6. Forestland Management Technical Assistance Program, Underwood CD
7. CREP, Underwood CD
8. WRIA 29 Watershed Planning Program, Underwood CD
9. Watershed Conservation Warehouse Program, Underwood CD
10. US Forest Service Northwest Forest Plan
11. Resource Protection Program, Southwest WA Health
12. Recreational Bathing Beaches Program, Southwest WA Health
13. Sewage O&M Program, Southwest WA Health
14. WRIA 29 Level 1 Assessment/Planning, Skamania County Planning
15. Stabler Water Quality & Quantity Study/Planning, Skamania County Planning

Klickitat Basin - WRIA #30

WRIA #30 encompasses about 922,837 acres. The Eastern Cascade Slopes and the Columbia Basin make up the watershed's ecoregions. Average rainfall is 31 inches. High unglaciated plateaus, buttes, and canyons to low mountains and foothills. Permanent and intermittent streams that are high to medium gradient. Typical soils include moderately deep stony loam to very cobbly loam. Potential natural vegetation is ponderosa pine, Oregon white oak, bitterbrush, Douglas- fir, and grasslands. Mean temperature ranges from 18/40° (winter) to 52/82° (summer).

Counties

Klickitat	(58%)	Yakima	(42%)

Primary Towns and Cities

Goldendale	Klickitat
Lyle	Dallesport
Maryhill	Centerville

Tribal Reservation Lands

Confederated Tribes and Bands of the Yakima Indian Nation

Special Purpose Districts

Central Klickitat Conservation District

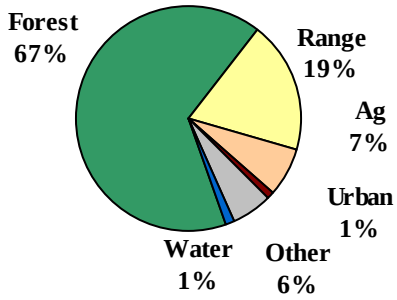
Eastern Klickitat Conservation District

South Yakima Conservation District

Underwood Conservation District

North Dalles Irrigation Districts

Land use in the Klickitat Basin



Land Base (in acres)

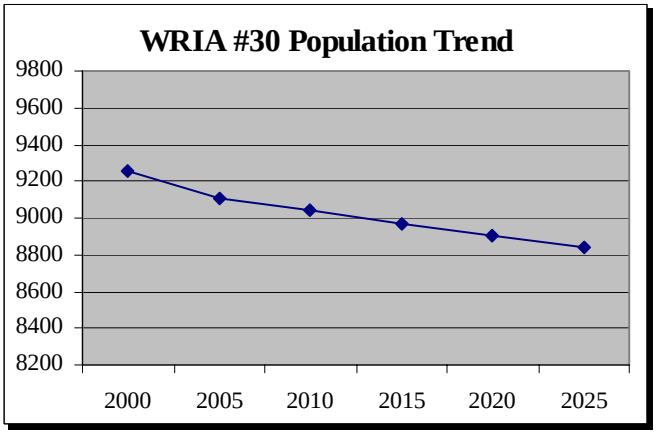
Federal	9,684	1.0%
State	89,571	9.7%
Local	0	0%
Tribal	367,168	39.8%
Private	456,413	49.5%

Principal Economic Activities (as total wages)

Agriculture/Forestry	9%
Manufacturing	24%
Retail Trade	10%
Services	10%
Government	27%
Other	20%

Population

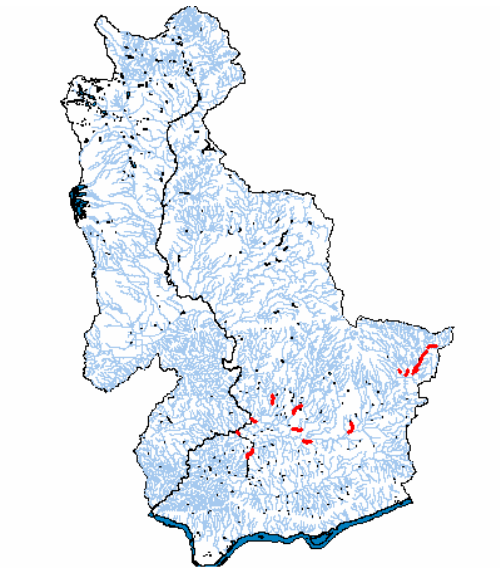
There are approximately 9,181 people living in the Klickitat Basin. The primary population centers are Goldendale and Klickitat. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #30

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Butler Creek, Columbia River, Little Klickitat River, and Swale Creek

Low Instream Flow in Blockhouse Creek, Bloodgood Creek, Bowman Creek, Little Klickitat River, Mill Creek, and Swale Creek

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Flows not set; limited growth pressure

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #30

1. TMDL for Little Klickitat River
2. US Forest Service Northwest Forest Plan
3. Watershed Management Plan, Goldendale
4. Watershed Protection Improvements, Goldendale
5. Dairy Nutrient Management Program, South Yakima CD
6. White Salmon Watershed Enhancement Project, Underwood CD
7. Wind River Watershed Restoration Project, Underwood CD
8. Jewett Creek Watershed Project, Underwood CD
9. Dairy Waste System Technical & Financial Program, Underwood CD
10. Forestland Management Technical Assistance Program, Underwood CD
11. CREP, Underwood CD
12. WRIA 29 Watershed Planning Program, Underwood CD
13. Watershed Conservation Warehouse Program, Underwood CD

Rock-Glade Basin - WRIA #31

WRIA #31 is part of the Columbia Basin and Eastern Cascade Slopes ecological region. The watershed encompasses about 1,058,719 acres. Yearly rainfall averages 8 inches. This landscape is composed of layer upon layer of basalt, and remnants of the Pleistocene lake basins. The typical soils are deep gravelly loam to silty loam. Potential natural vegetation is big sagebrush, bitterbrush, bluebunch wheatgrass, and Idaho fescue.

Counties

Benton	(50%)	Klickitat	(44%)
Yakima	(6%)		

Primary Towns and Cities

Kennewick	Plymouth
Paterson	Roosevelt
Goodnoe Hills	Bickleton

Tribal Reservation Lands

None

Special Purpose Districts

Benton Conservation District

Central Klickitat Conservation District

Eastern Klickitat Conservation District

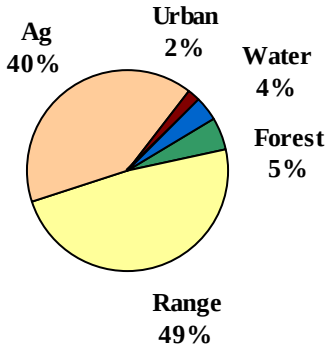
South Yakima Conservation District

Columbia Water Irrigation District

Power Irrigation District

Kennewick Irrigation District

Land use in the Rock/Glade Basin



Land Base (in acres)

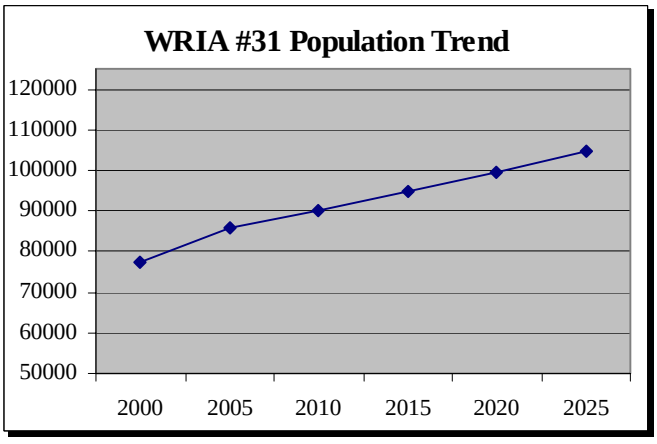
Federal	26,094	2.5%
State	59,262	5.6%
Local	0	0%
Tribal	443	<.1%
Private	972,919	91.8%

Principal Economic Activities (as total wages)

Agriculture	10%
Retail Trade	17%
Services	33%
Government	16%
Other	24%

Population

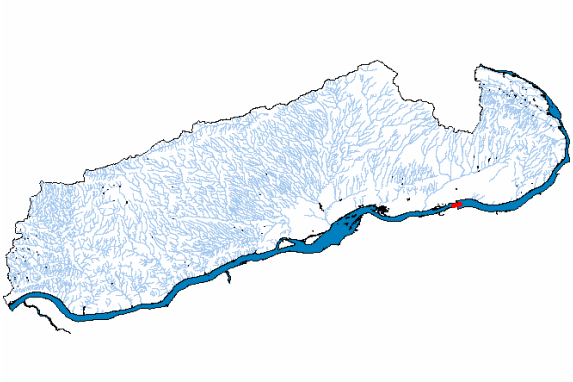
There are approximately 81,477 people living in the Rock-Glade Basin. The primary population centers are Kennewick and Plymouth. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #31

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Columbia River

Sediment Bioassay in Columbia River

Total Dissolved Gas in Columbia River

Arsenic in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 61,143 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

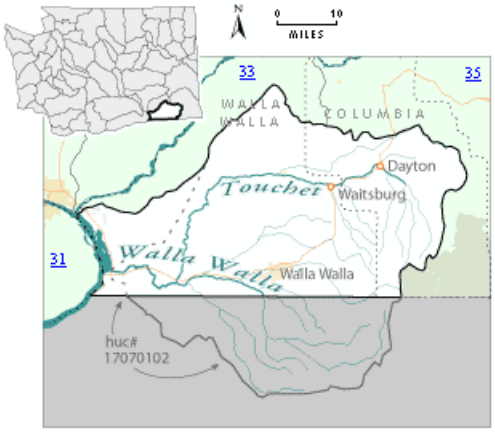
Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #31

1. TMDL for Columbia River
2. Timber, Fish, Wildlife Project
3. Develop Best Management Practices, Benton CD
4. Coordinated Resource Management Plan, Central Klickitat CD
5. Conservation Reserve Enhancement Program (CREP), Central Klickitat CD
6. Continuous Conservation Reserve Program, Central Klickitat CD
7. Temperature TMDL on Little Klickitat River, Central Klickitat CD
8. Water Quality Implementation Plan – Direct Seeding, Central Klickitat CD
9. Forestry Incentive Program, Central Klickitat CD
10. Nitrate Education Program, Benton-Franklin County Health
11. Critical Areas Ordinance, Benton County Planning

Walla Walla Basin - WRIA #32



WRIA #32 is contained within the Columbia Basin and Blue Mountains ecological regions. This watershed is about 907,746 acres. The Walla Walla basin is primarily rolling loessal duneland formations. Some of the formations were reworked by flooding when the floodwaters of Lake Missoula backed up at Walula Gap. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, rabbit brush, and bitterbrush. Average annual rainfall ranges between 5 inches in the lower elevations to 40 inches in the Blue Mountains.

Counties

Walla Walla	(2%)	Columbia	(28%)

Primary Towns and Cities

Walla Walla	College Place
Dayton	Waitsburg

Tribal Reservation Lands

None

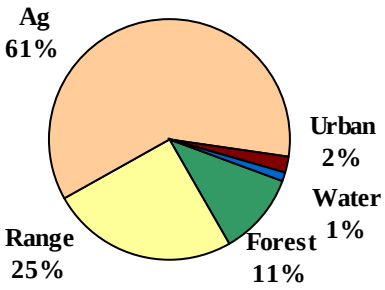
Special Purpose Districts

Walla Walla County Conservation District

Columbia Conservation District

Irrigation Districts: Hearn; West End; Artesa; Blalock; Blalock Orchard; Consolidated; East Side; Gardena Farms; Green Tank; Hydro; Lowden; Mud Creek; Orchard; Touchet Valley; Walla Walla; Water and Power; and West Side

Land use in the Walla Walla Basin



Land Base (in acres)

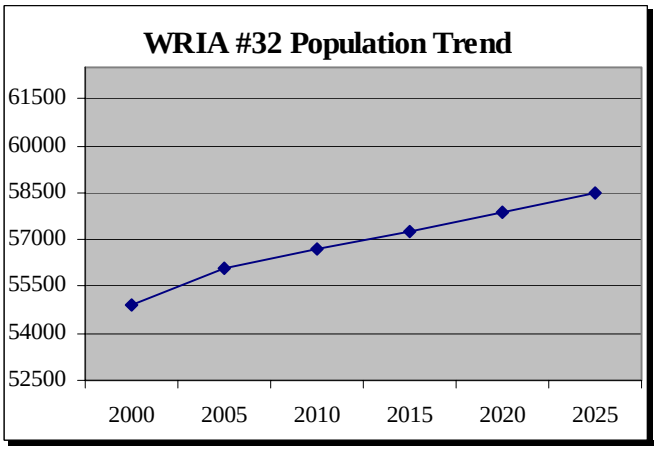
Federal	53,129	5.9%
State	19,473	2.1%
Local	602	0.1%
Tribal	0	0%
Private	834,541	91.9%

Principal Economic Activities (as total wages)

Manufacturing	25%
Government	34%
Retail Trade	10%
Agriculture	8%
Other	23%

Population

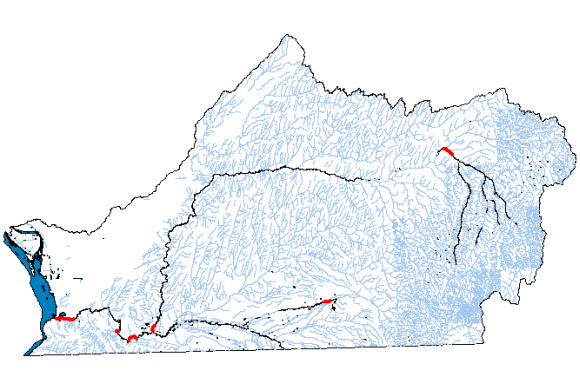
There are approximately 55,514 people living in the Walla Walla Basin. The primary population centers are Walla Walla and Dayton. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #32

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Touchet River and Walla Walla River

High Temperature in Mill Creek, Touchet River, and Walla Walla River

pH in Mill Creek and Walla Walla River

Pesticides in Walla Walla River

Low Instream Flow in Mill Creek and Walla Walla River

PCBs in Walla Walla River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected above 10 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

Over appropriated; medium growth

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 93,070 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

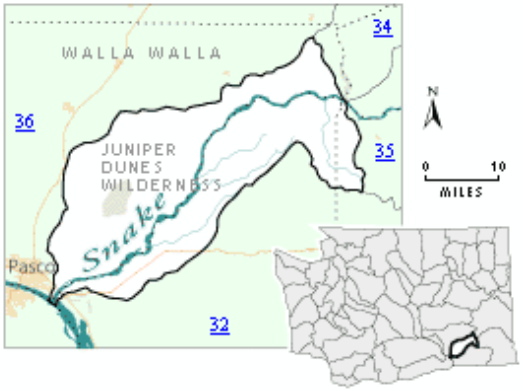
Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #32

1. TMDL for Mill Creek
2. TMDL for Walla Walla River
3. TMDL for Touchet River
4. Touchet River Watershed Analysis, DNR
5. 2514 Watershed Planning Process, Walla Walla County and Columbia CD
6. US Forest Service Northwest Forest Plan
7. Walla Walla Wellhead and Initial Aquifer Characterization Study, Walla Walla County
8. Sewage Program, Columbia Health District
9. Conservation Reserve Enhancement Program (CREP), Walla Walla/Columbia CD
10. Conservation Tillage Program, Walla Walla CD
11. Insteam Flow Enhancement Program, Walla Walla CD
12. Dept. of Corrections Dairy Program, NRCS
13. Direct Seeding Program, Columbia CD
14. Upland BMP Program, Columbia CD
15. Onsite Sewage Program, Walla Walla County Health
16. Water Quality Program, Walla Walla

Lower Snake Basin - WRIA #33



WRIA #33 is located within the Columbia Basin ecosystem. This 462,540-acre watershed receives about 11 inches per year of rainfall. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and bitterbrush.

Counties

Franklin	(57%)	Walla Walla	(39%)
Columbia	(4%)		

Primary Towns and Cities

Page	Burbank
Snake River	Burbank Heights
Haas	

Tribal Reservation Lands

None

Special Purpose Districts

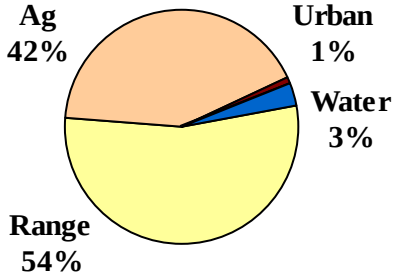
Franklin Conservation District

Walla Walla County Conservation District

Columbia Conservation District

Burbank Irrigation District

Land use in the Lower Snake Basin



Land Base (in acres)

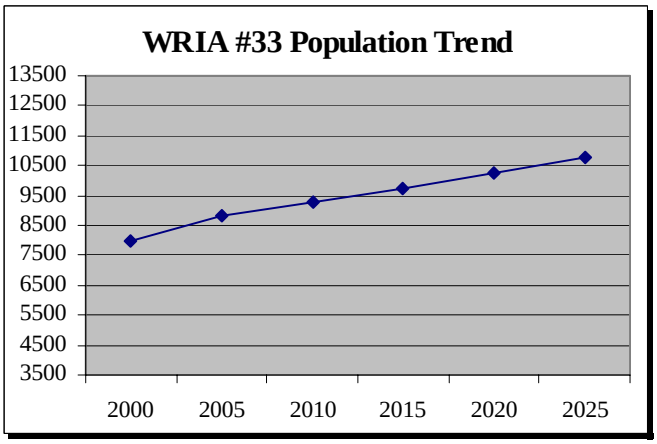
Federal	27,819	6.0%
State	20,464	4.4%
Local	0	0%
Tribal	0	0%
Private	414,256	89.6%

Principal Economic Activities (as total wages)

Agriculture	5%
Retail Trade	13%
Services	18%
Government	18%
Manufacturing	8%
Other	18%

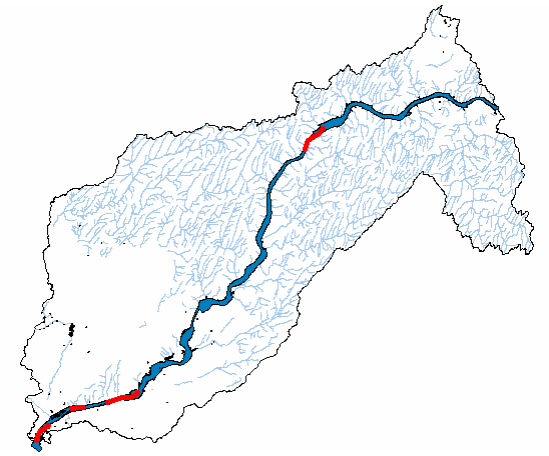
Population

There are approximately 8,404 people living in the Lower Snake Basin. The majority of people live in unincorporated areas.



Surface Water Quality
Water Quality Assessment Map WRIA #33

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Snake River

Dissolved Oxygen in Snake River

Total Dissolved Gas in Snake River

2. Impacted Designated Uses

Groundwater Quality

Nitrate – Levels detected > 10 g/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 91,925 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

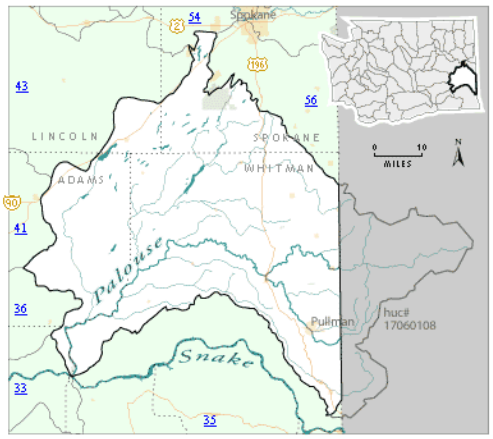
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts #33

1. TMDL for Snake River
2. Mid-Columbia Basin Ground Water Management Area, Franklin County
3. Columbia Basin Groundwater Management Area, Franklin CD/Benton-Franklin County Health
4. DOE Franklin County Watershed Education Program, Franklin CD
5. Increase Irrigation Efficiencies Program, Franklin CD
6. DOE Crop Remote Sensing Project, Franklin CD
7. Groundwater Nitrate Implementation Project, Franklin CD
8. Dairy Nutrient Management Project, Franklin CD
9. Nitrate Education Program, Benton-Franklin County Health
10. On-Site Sewage Program, Benton-Franklin/Walla Walla County Health

Palouse Basin - WRIA #34



WRIA #34 encompasses about 1,765,152 acres. Located in the heart of the Palouse, this watershed receives an average annual rainfall of 13 inches per year. It is part of the Columbia Basin ecoregion. The Palouse Basin is characterized by dune-like ridges, deep loess soils, and low gradient intermittent, streams. Soils are high in organic matter and clay, and are highly productive. The potential natural vegetation is the fescue-snowberry plant association.

Counties

Whitman	(62%)	Adams	(20%)
Spokane	(13%)	Lincoln	(4%)
Franklin	(1%)		

Primary Towns and Cities

Pullman	Medical Lake	Colfax
Palouse	Rosalia	Garfield
St. John	Sprague	

Tribal Reservation Lands

None

Special Purpose Districts

Palouse-Rock Lake Conservation District

Pine Creek Conservation District

Palouse Conservation District

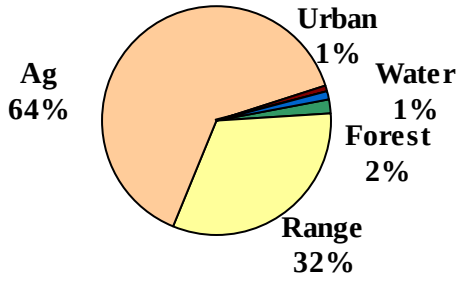
Whitman Conservation District

Adams Conservation District

Spokane County Conservation District

Lincoln County Conservation District

Land use in the Palouse Basin



Land Base (in acres)

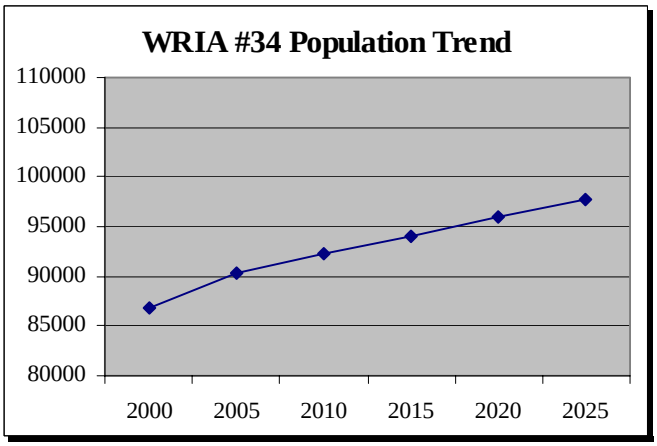
Federal	42,668	2.4%
State	72,200	4.1%
Local	0	0%
Tribal	0	0%
Private	1,650,282	93.5%

Principal Economic Activities (as total wages)

Agriculture/Forestry	4%
Retail Trade	17%
Services	12%
Government	50%
Other	18%

Population

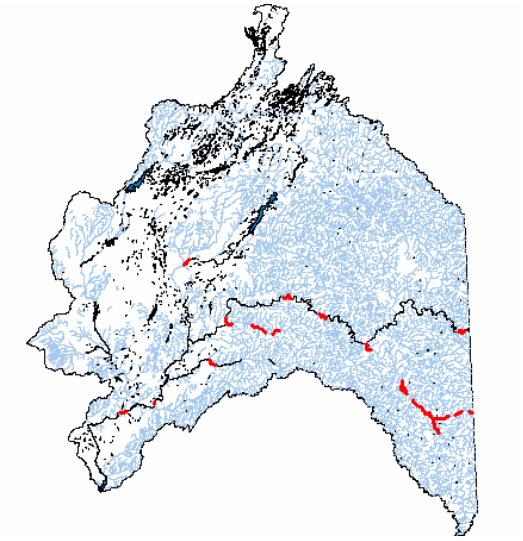
There are approximately 88,656 people living in the Palouse Basin. The primary population centers are Pullman, Medical Lake, and Colfax. Nearly one-half of the population live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #34

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Missouri Flat Creek, Palouse River, Paradise Creek, and Rebel Flat Creek

High Temperature in Palouse River, Paradise Creek, Pine Creek, Rock Creek, and Union Flat Creek

Dissolved Oxygen in Missouri Flat Creek, Palouse River, Paradise Creek, Pine Creek, and Rebel Flat Creek

pH in Palouse River, Pine Creek, and Rock Creek

Metals in Palouse River

Pesticides in Palouse River

Nutrients in Medical Lake and Paradise Creek

PCBs in Palouse River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 54,467 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts #34

1. TMDL for Palouse River, South Fork
2. TMDL for Snake River
3. Paradise Creek Watershed Plan, Palouse CD
4. Missouri Flat Creek Watershed Plan, Palouse CD
5. Information & Education Program, Whitman CD
6. Conservation Youth Program, Whitman CD
7. Direct Seed Education Program, Whitman CD
8. Northwest Crops Project, Whitman CD
9. Implementation Program, Whitman CD
10. Onsite Septic System Technical Assistance, Whitman County Health
11. Evaluation of Dryland BMPs on Water Quality, WSU
12. Pullman-Moscow Ground Water Model Update, City of Pullman
13. South Fork Palouse River Watershed Plan, Palouse CD
14. Palouse River (North Fork only) Characterization, Palouse CD

15. Palouse River (North Fork only) Watershed Council, Palouse CD
16. Water Quality Data Gap Analysis for the Palouse River Basin of both Washington and Idaho, Palouse CD
17. TMDL for fecal coliform in progress on Palouse River (North Fork only), Palouse CD
18. Water quality monitoring program on Palouse River (North Fork only), Palouse CD
19. North Fork River Watershed Planning Committee, Palouse CD
20. Columbia Basin Groundwater Management Area, Franklin CD/ Benton-Franklin County Health
21. DOE Franklin County Watershed Education Program, Franklin CD
22. Increase Irrigation Efficiencies Program, Franklin CD
23. DOE Crop Remote Sensing Project, Franklin CD
24. Groundwater Nitrate Implementation Project, Franklin CD
25. Dairy Nutrient Management Project, Franklin CD
26. BMP Installation Program, Palouse-Rock Lake CD
27. Rock Creek Monitoring Project, Palouse-Rock Lake CD
28. Alternative Cropping Projects, Palouse-Rock Lake CD
29. CRP Tree Planting Program, Palouse-Rock Lake CD
30. Environmental Quality Incentive Program (EQIP), NRCS
31. Technical Assistance for CRP, NRCS
32. Water Quality Technical Assistance Program, Pine Creek CD
33. Water Quality Education Program, Pine Creek CD
34. Technical Assistance Program, Pine Creek CD
35. Cow Creek Implementation Program, Adams CD
36. Direct Seed Minimum Till Program, Adams CD
37. GWMA Program, Adams CD
38. Fecal Baseline Study, Adams CD
39. Baseline Lower Palouse River Study, Adams CD
40. BMP Implementation Program, Adams CD
41. Riparian Buffer Cost Share Program, Spokane CD
42. Nitrate Education Program, Benton-Franklin County Health
43. On-Site Sewage Program, Benton-Franklin/Whitman/Spokane County Health
44. Wellhead Protection Program, Spokane County Health
45. Environmental Health Education, Spokane County Health
46. Aquifer Protection Program, Spokane County Health
47. 2514 Watershed Planning

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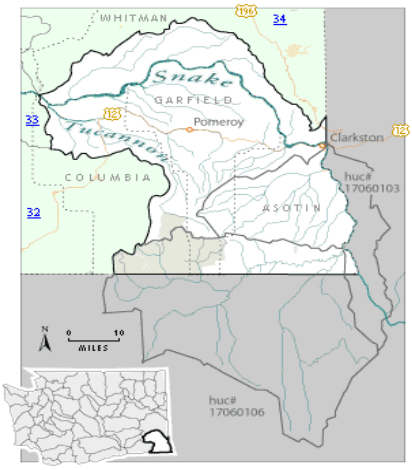
Middle Snake Basin - WRIA #35



WRIA #35 encompasses about 1,439,735 acres of Columbia Basin and Blue Mountain ecoregions. This watershed drains the Snake River and receives an average rainfall of 17 inches per year. This basin is comprised of canyons and highly dissected landforms. The uplifted Columbia basalt plateau has been eroded into a series of knife-edge ridges cut by deep canyons. Soils are a mixture of colluvial canyon soil and soil with a loess or ash mantle. Potential natural vegetation ranges from bunchgrass to Douglas-fir with intermittent ponderosa pine.

Counties

Garfield	(32%)	Asotin	(28%)
Whitman	(20%)	Columbia	(20%)

Primary Towns and Cities

Clarkston Pomeroy Asotin

Tribal Reservation Lands

None

Special Purpose Districts

Palouse Conservation District

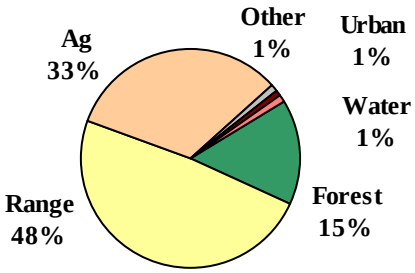
Whitman Conservation District

Columbia Conservation District

Pomeroy Conservation District

Asotin County Conservation District

Land use in the Middle Snake Basin



Land Base (in acres)

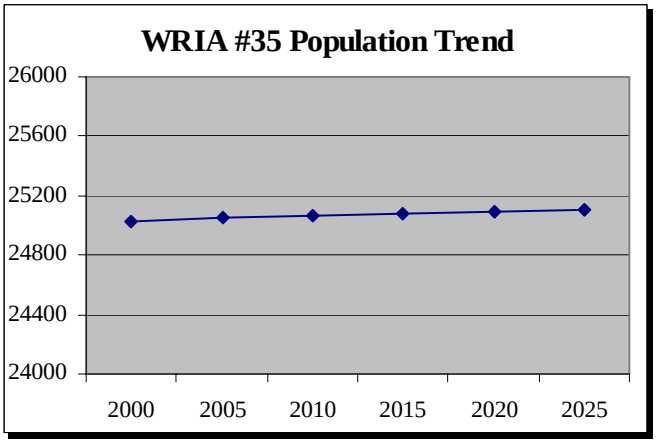
Federal	281,455	19.6%
State	79,732	5.5%
Local	31	<.01%
Tribal	0	0%
Private	1,076,516	74.9%

Principal Economic Activities (as total wages)

Services	30%
Government	18%
Retail Trade	26%
Wholesale Trade	16%
Agriculture	10%

Population

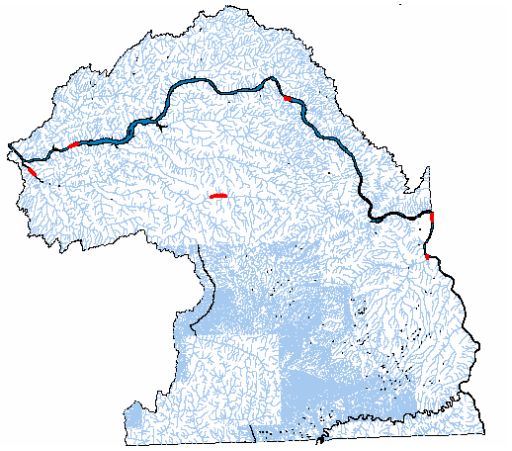
There are approximately 25,037 people living in the Middle Snake Basin. The primary population centers are Clarkston, Asotin, and Pomeroy. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #35

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Asotin Creek and Pataha Creek

High Temperature in Snake River and Tucannon River

Total Dissolved Gas in Snake River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

Lewiston Basin Aquifer

Water Quantity

Over appropriated; low growth

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

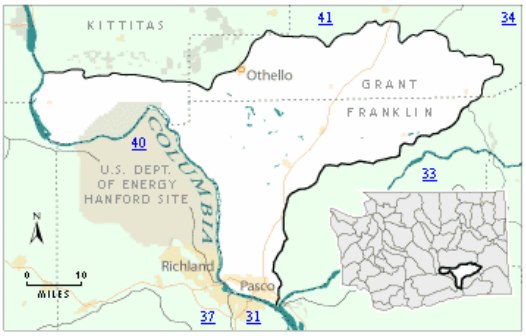
Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #35

1. TMDL for Pataha Creek
2. TMDL for Snake River
3. Salmon in the Classroom, Asotin CD
4. Water Quality Monitoring on Asotin Creek, Asotin CD
5. Tree Planting Survival on Asotin Creek, Asotin CD
6. Tree Planting and Bank Stabilization Projects on Asotin Creek, Asotin CD
7. BPA/SRFB Five-Year Direct Seed, Asotin CD
8. WCC/BPA Upland BMPs, Asotin CD
9. BPA/SRFB Riparian Fencing, Asotin CD
10. WCC Conservation Reserve Enhancement Program (CREP), Asotin CD
11. BPA/SRFB Riparian Planting, Asotin CD
12. US Forest Service Challenge Cost-Share Agreements for Fencing and Planting, Asotin CD
13. BPA Native Tree and Shrub Nursery, Asotin CD
14. Pataha Creek Model Watershed Program, Pomeroy CD
15. Garfield County Sub-basin Summary, Pomeroy CD
16. CREP, Pomeroy CD
17. Continuous CRP Program, Pomeroy CD
18. Tucannon River Model Watershed Implementation Program, Columbia CD
19. US Forest Service Northwest Forest Plan
20. Water Study, Pomeroy Public Works.
21. Snake River Salmon Recovery Strategy, 2002.
22. Salmon Limiting Factors Analysis for WRIAs 33 and 35.
23. Asotin County Subbasin Summary, 2001.
24. Asotin Creek Model Watershed Plan, 1995.

Esquatzel Coulee Basin - WRIA #36



WRIA #36 drains about 1,058,635 acres. This watershed is located within the Columbia Basin ecoregion. It receives an average of only 6 inches of rainfall per year. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and three-tip sagebrush.

Primary Towns and Cities

Pasco	Othello	Connell
Mattawa	Mesa	Washtuca

Counties

Franklin	(50%)	Adams (33%)
Grant	(17%)	

Tribal Reservation Lands

None

Special Purpose Districts

Franklin Conservation District

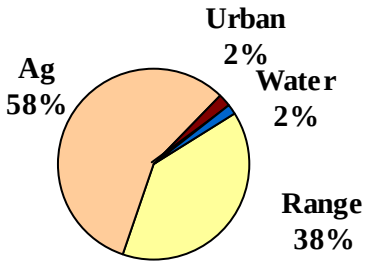
Adams Conservation District

Warden Conservation District

Franklin County Irrigation District

South Columbia Irrigation District

Land use in the Esquatzel Basin



Land Base (in acres)

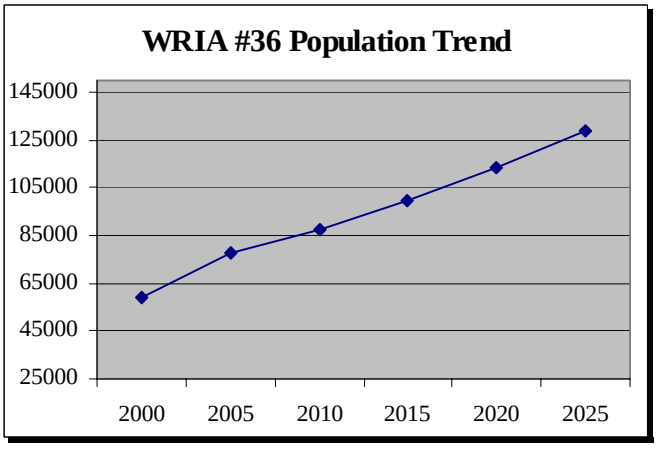
Federal	143,790	13.6%
State	33,272	3.1%
Local	0	0%
Tribal	0	0%
Private	861,572	83.3%

Principal Economic Activities (as total wages)

Agriculture	25%
Retail Trade	13%
Services	18%
Government	18%
Manufacturing	8%
Other	18%

Population

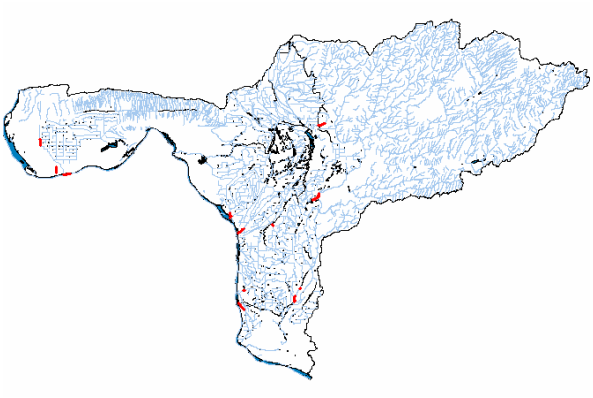
There are approximately 68,165 people living in the Esquatzel Coulee Basin. The primary population centers are Othello and Pasco. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #36

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in East Potholes Canal, Eltopia Branch Canal, Esquatzel Coulee, Mattawa Drain, Mattawa Wasteway, Potholes Canal, Scbid PE 16.4 Wasteway, Scooteney Wasteway, and WB5 Wasteway #1

Dissolved Oxygen in East Potholes Canal, Esquatzel Coulee, Potholes Canal, and Scooteney Wasteway

pH in Columbia River, Esquatzel Coulee, and Scooteney Wasteway

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 121,818 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

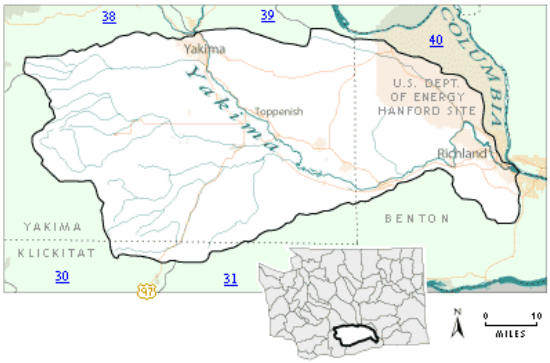
Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #36

1. TMDL for Columbia River
2. Mid-Columbia Watershed Planning, Grant County
3. On-site Sewage Program, Benton-Franklin County Health
4. Mid-Columbia Basin Ground Water Management Area, Franklin/Adams/Grant County
5. Othello Water Quality Project, Othello CD
6. Columbia Basin Groundwater Management Area, Franklin CD and Benton-Franklin County Health
7. DOE Franklin County Watershed Education Program, Franklin CD
8. Increase Irrigation Efficiencies Program, Franklin CD
9. DOE Crop Remote Sensing Project, Franklin CD
10. Groundwater Nitrate Implementation Project, Franklin CD
11. Dairy Nutrient Management Project, Franklin CD
12. Direct Seed Minimum Till Program, Adams CD
13. GWMA Program, Adams CD
14. Fecal Baseline Study, Adams CD
15. Baseline Lower Palouse River Study, Adams CD
16. BMP Implementation Program, Adams CD
17. Nitrate Education Program, Benton-Franklin County Health

Lower Yakima Basin - WRIA #37



WRIA #37 is a 1,862,269-acre watershed. The majority of the watershed is in the Columbia Basin ecoregion, with a smaller portion in the Eastern Cascade Slopes. Average annual rainfall varies from over 80 inches in the higher elevations to less than 10 inches at Kennewick. The upper basin is a series of anticlinal ridges and synclinal valleys. The lower basin was formed primarily through the flooding of Lake Missoula. Native vegetation consists of big sagebrush/bluebunch wheatgrass associations in the desert lowlands and Ponderosa pine and Doug-fir in the higher elevations.

Counties

Yakima	(74%)	Benton	(24%)
Klickitat	(2%)		

Primary Towns and Cities

Yakima	Sunnyside	Moxee
Toppenish	Grandview	Ahtanum
Prosser	West Richland	Union Gap

Tribal Reservation Lands

Confederated Tribes and Bands of the Yakama Indian Nation

Special Purpose Districts

South Yakima Conservation District

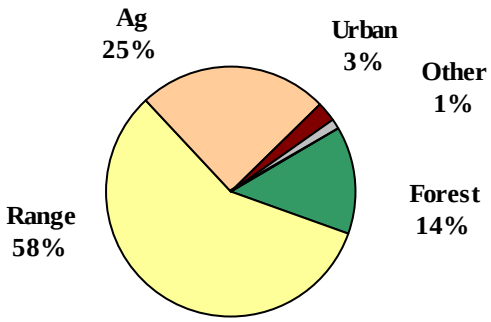
North Yakima Conservation District

Benton Conservation District

Eastern Klickitat Conservation District

Irrigation Districts: Benton; Columbia; Grandview; Kennewick; Kiona; Prosser; Ahtanum; Buena; Home; Outlook; Roza-Sunnyside Joint Board; Selah-Moxee; Snipes Mountain; Terrace Heights; Union Gap; Wenas; City of Yakima; Yakima-Tieton; Zillah; and Wapato

Land Use in the Lower Yakima Basin



Land Base (in acres)

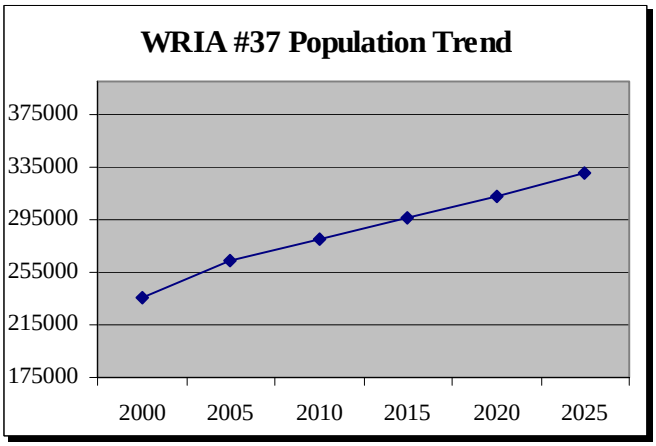
Federal	222,621	11.9%
State	78,449	4.2%
Local	903	<.1%
Tribal	887,918	47.7%
Private	672,376	36.1%

Principal Economic Activities (as total wages)

Agriculture/Forestry	21%
Manufacturing	12%
Retail Trade	15%
Services	20%
Government	14%
Other	18%

Population

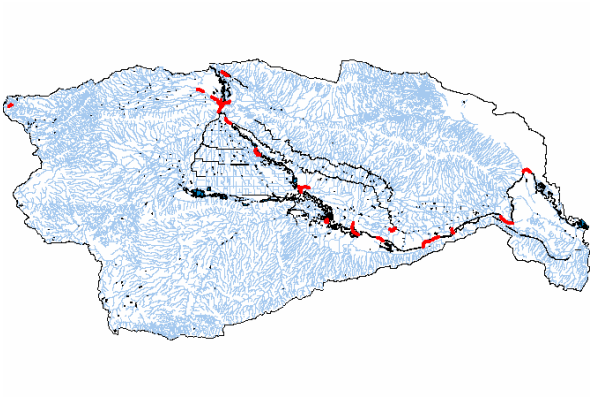
There are approximately 250,089 people living in the Lower Yakima Basin. The primary population centers are Yakima, Sunnyside, and Toppenish. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #37

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Granger Drain, Moxee Drain, Wide Hollow Creek, and Yakima River

High Temperature in Granger Drain, Moxee Drain, Snipes Creek, Spring Creek, Sulfur Creek Wasteway, Wide Hollow Creek, and Yakima River

Dissolved Oxygen in Granger Drain, Moxee Drain, Snipes Creek, Wide Hollow Creek, and Yakima River

pH in Granger Drain, Moxee Drain, and Yakima River

Metals in Yakima River

Pesticides in Granger Drain, Moxee Drain, Sulfur Creek Wasteway, Wide Hollow Creek, and Yakima River

Nutrients in Giffin Lake and Granger Drain

Low Instream Flows in Yakima River

PCBs in Yakima River

Turbidity in Yakima River

2. Impacted Designated Uses

Groundwater Quality

Nitrate – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Over appropriated; high growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

Approximately 29,348 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #37

1. TMDL for Granger Drain
2. TMDL for Griffin Lake
3. TMDL for Yakima River
4. Yakima River Water Quality Management Plan, Yakima Valley/Benton/Kittittas Council of Governments
5. Moxee Drain Irrigated Agriculture BMP Implementation, North Yakima CD
6. Moxee Watershed Plan - PL566, NRCS and North Yakima CD
7. Environmental Quality Incentives Program (EQIP), NRCS
8. Water Quality Monitoring Project, North Yakima CD
9. Lower Yakima River Suspended Sediment TMDL, Ecology
10. Stormwater Quality Management Plan, City of Yakima

11. Ground water monitoring of the Toppenish Basin, Yakama Indian Nation
12. Enclose Conduits and Canal Automation, Roza ID
13. Enclose Conduits, Sunnyside ID
14. Upper Yakima Valley Wellhead Protection, Yakima County
15. Yakima River Water Quality Program, Benton CD
16. Salmonid Habitat Improvement Project, Benton CD
17. Endangered Species Habitat Improvement Project, Benton CD
18. Irrigation Management Zone Demonstration Project, Benton CD
19. Water Efficiency Program, North Yakima CD
20. Water Quality Monitoring Program, North Yakima CD
21. Riparian Restoration Program, North Yakima CD
22. Water Quality Implementation Program, North Yakima CD
23. Moxee Drain Irrigation Agriculture BMP Implementation Program, North Yakima CD
24. Moxee Watershed Plan, North Yakima CD
25. Granger Drainage Run-off Reduction Program, South Yakima CD
26. Irrigated Agriculture Conversion Program, South Yakima CD
27. Implementation Program, South Yakima CD
28. Dairy Nutrient Management Program, South Yakima CD
29. Nitrate Education Program, Benton-Franklin County Health
30. Yakima River Watershed Plan, Yakima County
31. Critical Areas Ordinance, Benton County Planning
32. City of Zillah Wastewater Facility Plan

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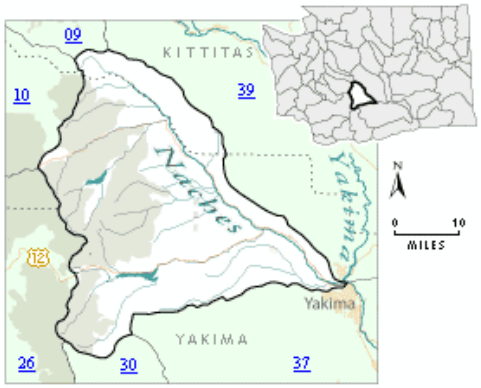
Naches Basin - WRIA #38



WRIA #38 encompasses about 706,949 acres. This watershed is located within the Eastern Cascade Slope, Cascade, and Columbia Basin ecoregions. High mountains, plateaus, and buttes, both glaciated and unglaciated. Perennial streams are high to medium gradient. Typical soils include stony loam, sandy loam, and gravelly loam. Potential natural vegetation is ponderosa pine, bitterbrush, Oregon white oak, grand fir, and Douglas- fir. It receives nearly 46 inches of rainfall per year. Mean temperature ranges from 16/35° (winter) to 47/82° (summer).

Counties

Yakima (90%) Kittitas (10%)

Primary Towns and Cities

Yakima Tieton Naches

Tribal Reservation Lands

None

Special Purpose Districts

North Yakima Conservation District

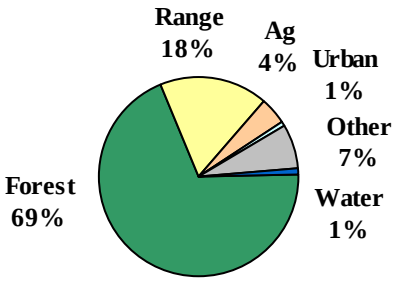
Yakima-Tieton Irrigation District

South Naches Irrigation District

Naches-Selah Irrigation District

Wapato Irrigation District

Land use in the Naches Basin



Land Base (in acres)

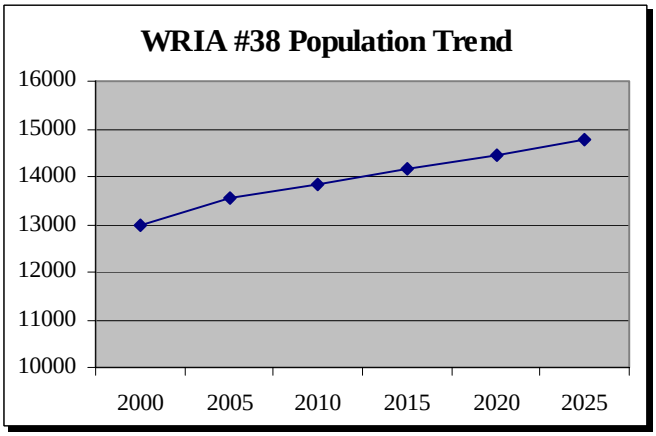
Federal	515,030	72.9%
State	59,766	8.4%
Local	0	0%
Tribal	8	<.01%
Private	132,143	18.7%

Principal Economic Activities (as total wages)

Agriculture/Forestry	21%
Services	20%
Retail Trade	15%
Government	14%
Manufacturing	12%

Population

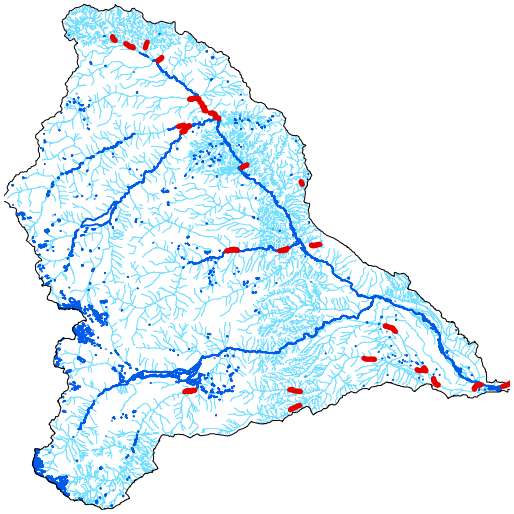
There are approximately 13,270 people living in the Naches Basin. The primary population centers are Yakima, Tieton, and Naches. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #38

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Cowiche Creek

High Temperature in American River, Bear Creek, Blowout Creek, Bumping River, Cowiche Creek, Crow Creek, Gold Creek, Little Naches River, Little Rattlesnake Creek, Mathew Creek, Naches River, Nile Creek, Rattlesnake Creek, Reynolds Creek, and Tieton River

pH in Naches River

Low Instream Flows in Cowiche Creek

Ammonia in Myron Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

Over appropriated; low growth

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts #38

US Forest Service Watershed Analysis for: Little Naches; Naches Mainstem; Wenas Creek; Bumbing and American River; upper and lower Tieton; Oak Creek; and Rattlesnake Creek.

DNR Watershed Analysis for Naches Pass; Cowiche Creek; and Reynolds Creek.

Water Quality Monitoring, North Yakima CD

Conservation Reserve Enhancement Project (CREP), NRCS

US Forest Service Northwest Forest Plan

Upper Yakima Valley Wellhead Protection, Yakima County

Yakima Basin Water Quality Plan, Yakima Valley Conference of Governments

Enclose irrigation canal, Naches-Selah Irrigation District

Water Efficiency Program, North Yakima CD

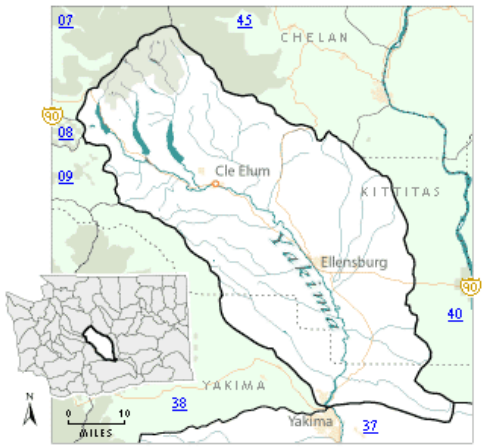
Water Quality Monitoring Program, North Yakima CD

Riparian Restoration Program, North Yakima CD

Water Quality Implementation Program, North Yakima CD

Yakima River Watershed Plan, Yakima County/Multiagency

Upper Yakima Basin - WRIA #39



WRIA #39 encompasses nearly 1,366,818 acres. The Cascades and Columbia Basin ecoregions make up most of this watershed. Rainfall averages 30 inches per year. Upper elevation is mountainous with V-shaped valleys with high gradient streams. Kittitas Valley is a synclinal dip with deposition from surrounding mountains. Native vegetation consist of grand fir, Douglas-fir, Ponderosa pine and big sagebrush/blue bunch wheatgrass associations.

Counties

Kittitas	(85%)	Yakima	(15%)

Primary Towns and Cities

Ellensburg	Selah	Cle Elum
Roslyn	Kittitas	

Tribal Reservation Lands

None

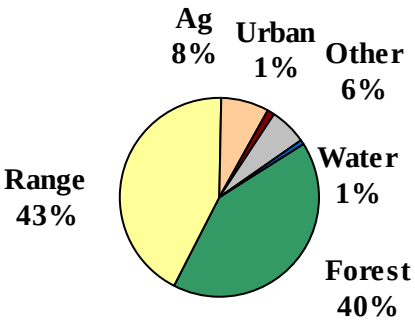
Special Purpose Districts

Kittitas County Conservation District

North Yakima Conservation District

Irrigation Districts: Cascade; Kittitas Reclamation; Wenas; Roza; Selah-Moxee; and Westside

Land Use in the Upper Yakima



Land Base (in acres)

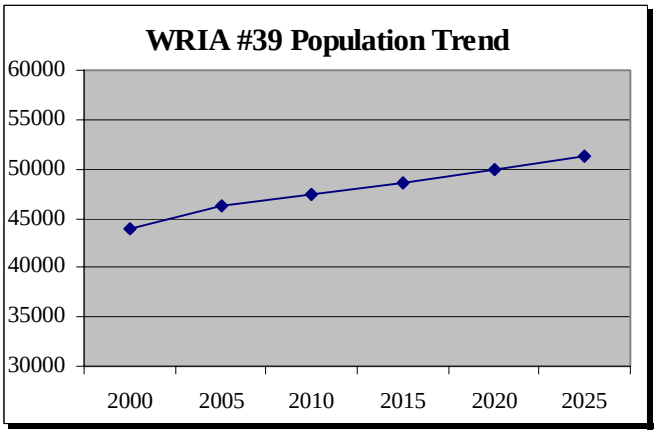
Federal	545,353	39.8%
State	222,691	16.3%
Local	36	<.01%
Tribal	0	0%
Private	600,736	43.9%

Principal Economic Activities (as total wages)

Agriculture/Forestry	7%
Retail Trade	24%
Services	19%
Government	33%
Other	17%

Population

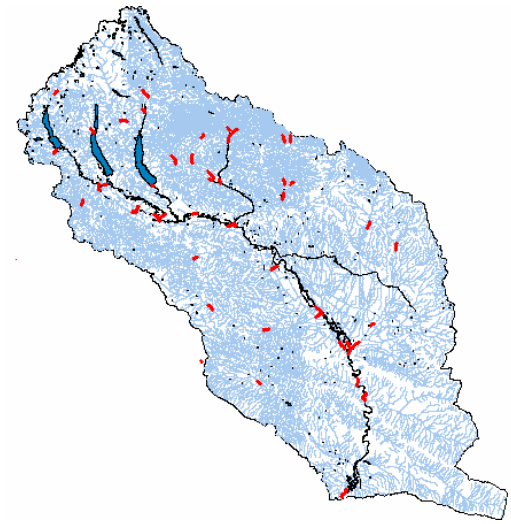
There are approximately 45,071 people living in the Upper Yakima Basin. The primary population centers are Ellensburg and Cle Elum. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #39

Listed problem areas are highlighted (online).



For mapping updates see:
http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Cooke Creek and Wilson Creek

High Temperature in Big Creek, Blue Creek, Cabin Creek, Cherry Creek, Cle Elum River, Cooke Creek, Cooper River, Gale Creek, Gold Creek, Iron Creek, Log Creek, Lookout Creek, Manastash Creek, Meadow Creek, Naneum Creek, Stafford Creek, Swauk Creek, Taneum Creek, Teanaway River, Thorp Creek, Waptus River, Williams Creek, Wilson Creek, and Yakima River

Dissolved Oxygen in Cooke Creek, Selah Ditch, and Yakima River

Metals in Yakima River

Pesticides in Cherry Creek and Yakima River

Low Instream Flow in Big Creek, Manastash Creek, Taneum Creek, Teanaway River, and Wenas Creek

Ammonia in Selah Ditch

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

Over appropriated; medium growth

Salmonid Stock Status

Impaired

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

Within this WRIA are larger community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts #39

1. TMDL for temperature in Teanaway River watershed
2. TMDL for turbidity, sediment and pesticides in Upper Yakima watershed
3. TMDL for Crystal Creek
4. Yakima Training Center Erosion Control, US Army
5. Teanaway River Temperature Control
6. US Forest Service watershed analysis for Cle Elum, Swauk Creek, Teanaway River, Table Mountain, Box Canyon, Yakima Basin, and Taneum Creek.
7. DNR watershed analysis for Big Creek, Quartz Mountain, Teanaway North, West Teanaway, Alps, Naneum Creek, Keechelus, and Mosquito Creek
8. US Forest Service Northwest Forest Plan
9. Onsite Sewage Program, Kittitas County Health
10. DOE Monitoring & Landowner Assistance, Kittitas CD
11. KCCD 2002 Implementation Project, Kittitas CD

12. Conservation Reserve Enhancement Program (CREP), Kittitas CD
13. Environmental Quality Incentive Program, NRCS
14. Water Efficiency Program, North Yakima CD
15. Water Quality Monitoring Program, North Yakima CD
16. Riparian Restoration Program, North Yakima CD
17. Water Quality Implementation Program, North Yakima CD
18. Dairy Nutrient Management Program, South Yakima CD
19. Yakima River Watershed Plan, Yakima County
20. Cooperative Water Quality Monitoring Program, Kittitas County Water Purveyors
21. Kittitas TMDL Support & Monitoring Program, Kittitas County Water Purveyors
22. TMDL for bacteria in the Wilson Creek Sub-basin
23. Yakima Tributary Access and Habitat Program
24. Teanaway Monitoring and Restoration Project, Kittitas County CD

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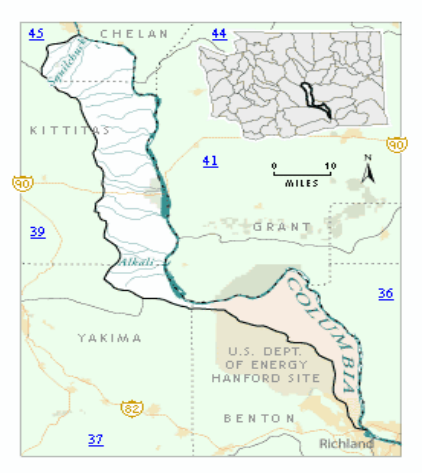
Alkali-Squilchuck Basin - WRIA #40



WRIA #40 encompasses about 539,132 acres. Bordering the Columbia River, this watershed is within the Columbia Basin and Cascade ecoregions. Average rainfall is 18 inches a year. The basin was formed primarily through the flooding of Lake Missoula. Floodwaters tearing through the basin dropped their load of loess, sand, and outwash gravel. Native vegetation consists of big sagebrush and bluebunch wheatgrass associations.

Counties

Kittitas	(48%)	Benton	(29%)
Chelan	(14%)	Yakima	(9%)

Primary Towns and Cities

Hanford Wenatchee Heights Malaga

Special Purpose Districts

Kittitas County Conservation District

Benton Conservation District

Chelan County Conservation District

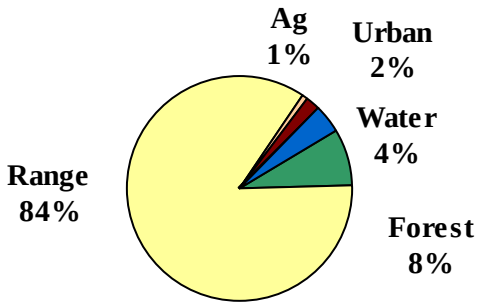
North Yakima Conservation District

South Yakima Conservation District

Tribal Reservation Lands

None

Land Use in the Alkali/Squilchuck Basin



Land Base (in acres)

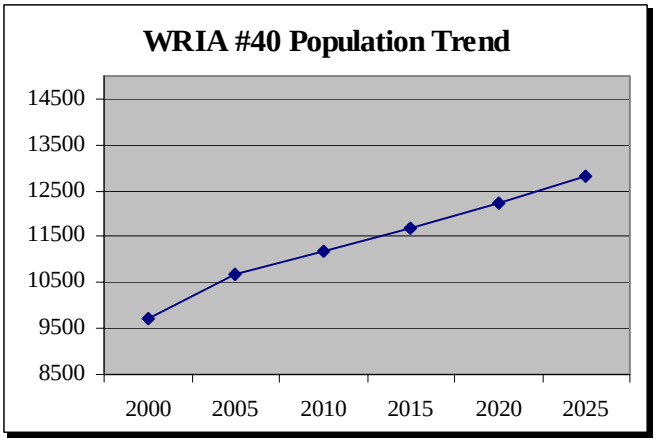
Federal	286,128	53.1%
State	148,726	27.6%
Local	0	0%
Tribal	0	0%
Private	104,277	19.3%

Principal Economic Activities (as total wages)

Agriculture	28%
Manufacturing	16%
Retail Trade	12%
Government	19%
Other	25%

Population

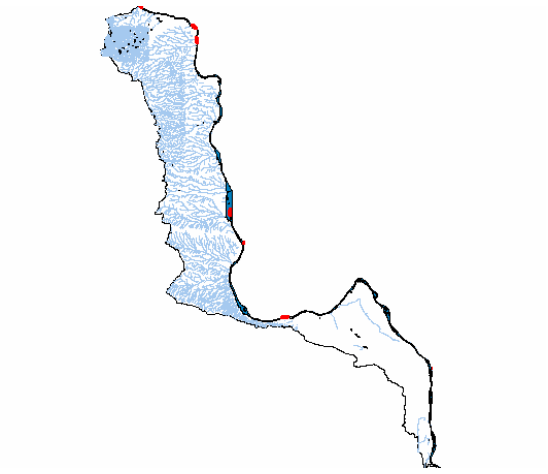
There are approximately 3,677 people living in the Alkali-Squilchuck Basin. The primary population center is Richland. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #40

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Total Dissolved Gas in Columbia River

Radioactive Material at the Hanford Reservation

2. Impacted Designated Uses

Groundwater Quality

Nitrates –- Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 35,462 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

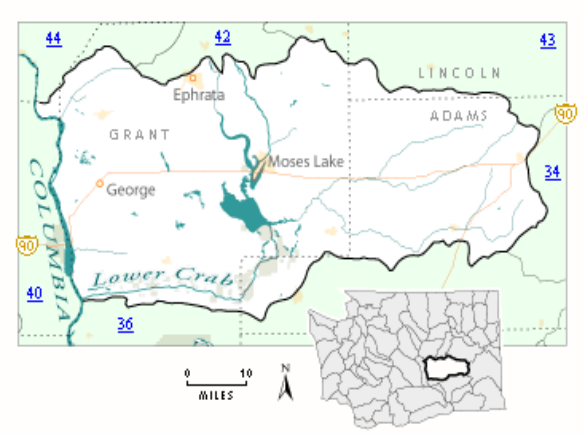
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts #40

1. TMDL for Columbia River
2. Instream flows of Columbia River under 173-563.WAC, Ecology
3. Kittitas Valley Water Quality, Kittitas CD
4. Stormwater Treatment Project, Kittitas County Water District #2
5. Nitrate Education Program, Benton-Franklin County Health
6. On-Site Sewage Program, Benton-Franklin County Health
7. Columbia Basin Groundwater Management Area, Benton-Franklin County Health

Lower Crab Basin - WRIA #41



WRIA #41 encompasses about 1,621,217 acres. This watershed is located within the Columbia Basin ecoregion. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and three-tip sagebrush. It only averages 6 inches of rain per year.

Counties

Grant (66%) Adams (32%)

Lincoln (2%)

Primary Towns and Cities

Moses Lake Ephrata

Othello Quincy

Ritzville Warden

Tribal Reservation Lands

None

Special Purpose Districts

Upper Grant Conservation District

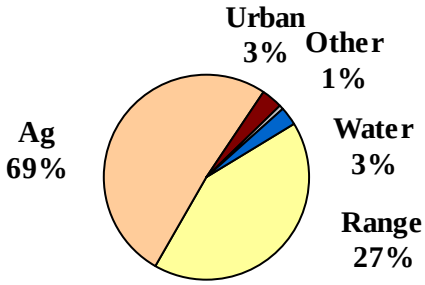
Lincoln Conservation District

Adams Conservation District

Warden Conservation District

Irrigation Districts: East Columbia Basin; Quincy-Columbia Basin; Moses Lake Irrigation and Rehabilitation

Land use in the Lower Crab Basin



Land Base (in acres)

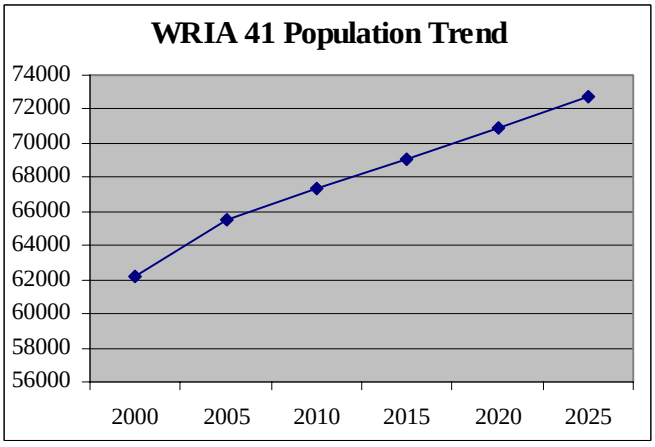
Federal	158,686	9.8%
State	89,835	5.5%
Local	688	<.01%-
Tribal	0	0%
Private	1,372,008	84.6%

Principal Economic Activities (as total wages)

Agriculture	28%
Manufacturing	16%
Retail Trade	12%
Government	19%
Other	25%

Population

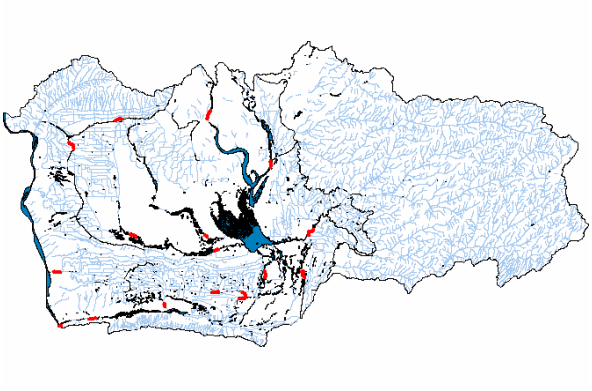
There are approximately 63,888 people living in the Lower Crab Basin. The primary population centers are Moses Lake, Ephrata, and Quincy.



Surface Water Quality

Water Quality Assessment Map WRIA #41

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Crab Creek, Crab Creek Lateral, East Potholes Canal, Frenchman Hills Wasteway, Lind Coulee, Red Rock Coulee, Rocky Ford Creek, Sand Hollow Creek, W645W Wasteway, West Canal, and Winchester Wasteway

Dissolved Oxygen in East Potholes Canal, Lind Coulee, Red Rock Coulee, Rocky Ford Creek, and W645W Wasteway

pH in Crab Creek, Frenchman Hills Wasteway, Lind Coulee, Red Rock Coulee, Rocky Ford Creek, Sand Hollow Creek, and Winchester Wasteway

Pesticides in Crab Creek and Potholes Lake

PCBs in Crab Creek

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 117,847 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #41

1. TMDL for BOR Waterways
2. TMDL for Moses Lake
3. TMDL for Columbia River
4. Ground Water Management Area (GWMA) plan for the Mid-Columbia, Grant/Benton-Franklin County Health
5. Nitrate Monitoring and Wellhead Protection Program, City of Quincy
6. Othello/Warden Irrigation Management Project
7. Othello Water Quality Project, Othello CD
8. Local Solutions for Nitrate Reduction, Othello CD
9. Dairy Management Program, Othello CD
10. Mid Columbia Watershed Planning, Grant County
11. Weber Coulee Watershed Planning and Implementation, Adams CD
12. Lind Coulee Water Quality Project, Warden CD
13. Rill Irrigation Manure Management Program, Upper Grant CD

14. Bilingual Mobile Irrigation Education Program, Upper Grant CD
15. Implementation Program, Upper Grant CD
16. Dairy Nutrient Management Program, Upper Grant CD
17. Direct Seed Minimum Till Program, Adams CD
18. GWMA Program, Adams CD
19. Fecal Baseline Study, Adams CD
20. Baseline Lower Palouse River Study, Adams CD
21. BMP Implementation Program, Adams CD
22. Nitrate Education Program, Benton-Franklin County Health
23. On-Site Sewage Program, Benton-Franklin/Grant County Health

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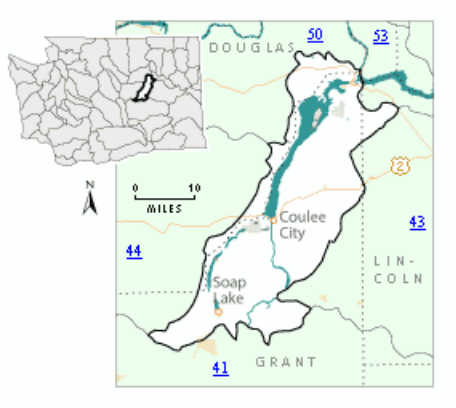
Grand Coulee Basin - WRIA #42



WRIA #42 lies in the heart of the Columbia Basin ecoregion. This watershed drains nearly 484,430 acres. It receives about 7 inches of rain per year. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and three-tip sagebrush.

Counties

Grant	(83%)	Douglas	(14%)
Lincoln	(3%)		

Primary Towns and Cities

Ephrata	Soap Lake
Grand Coulee	Electric City
Coulee City	Hartline

Tribal Reservation Lands

None

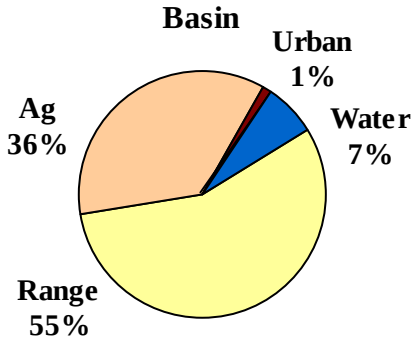
Special Purpose Districts

Upper Grant Conservation District

Lincoln County Conservation District

Foster Creek Conservation District

Land Use in the Grand Coulee Basin



Land Base (in acres)

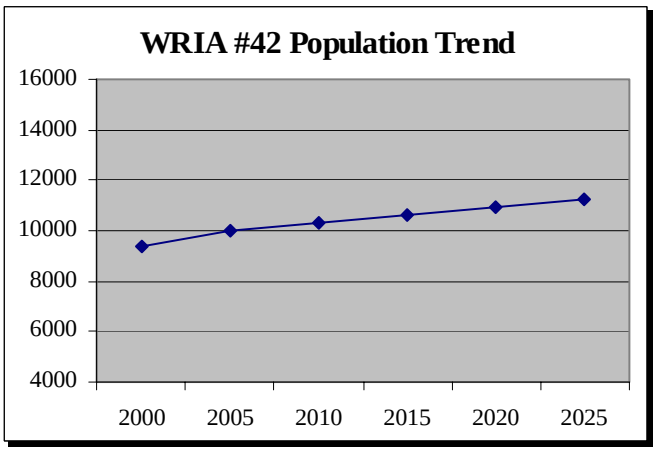
Federal	35,581	7.3%
State	42,500	8.8%
Local	25	<.01%
Tribal	0	0%
Private	406,324	83.9%

Principal Economic Activities (as total wages)

Agriculture/Forestry	25%
Government	20%
Manufacturing	16%
Retail Trade	15%
Other	24%

Population

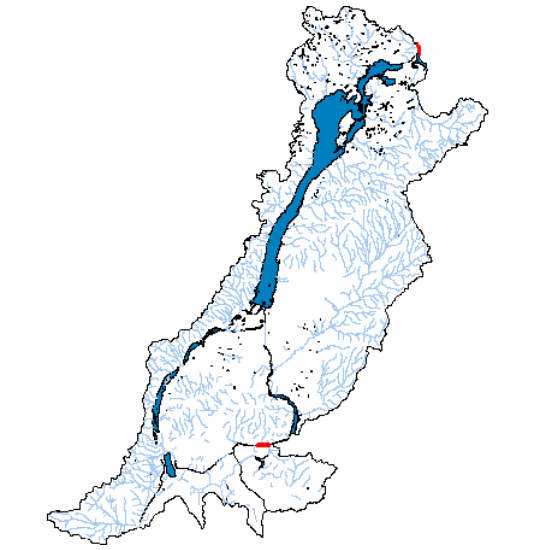
There are approximately 9,688 people living in the Grand Coulee Basin. The primary population centers are Ephrata and Soap Lake. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #42

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Main Canal

Dissolved Oxygen in Main Canal

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 78,634 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

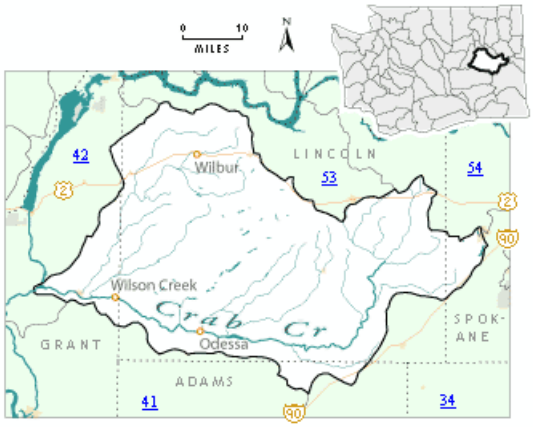
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #42

1. Assess nitrate leaching from irrigation, Upper Grant CD
2. Black Sands Water Quality Project, Upper Grant CD
3. Ground Water Management Area (GWMA) plan for the Mid-Columbia, Grant/Chelan-Douglas County Health
4. Nitrate Education Program, Benton-Franklin County Health
5. On-Site Sewage Program, Benton-Franklin/Grant/Chelan-Douglas County Health
6. Columbia Basin Groundwater Management Area, Benton-Franklin/ Grant/Chelan-Douglas County Health

Upper Crab-Wilson –WRIA #43



WRIA #43 encompasses about 1,185,282 acres of the Columbia Basin ecoregion. This large watershed receives only 10 inches of rainfall per year. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and three-tip sagebrush.

Primary Towns and Cities

Medical Lake	Odessa
Wilbur	Reardan
Harrington	Almira

Counties

Lincoln	(88%)	Grant	(8%)
Spokane	(2%)	Adams	(2%)

Tribal Reservation Lands

None

Special Purpose Districts

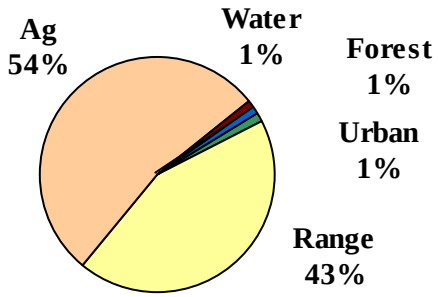
Lincoln County Conservation District

Upper Grant Conservation District

Spokane County Conservation District

Adams Conservation District

Land Use in the Upper Crab/Wilson



Land Base (in acres)

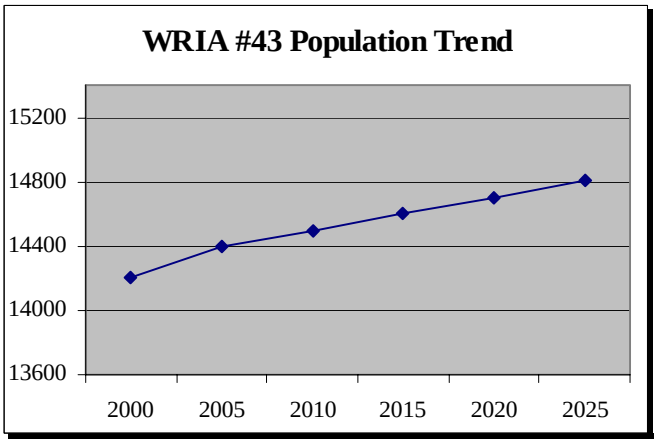
Federal	10,851	0.9%
State	36,678	3.1%
Local	0	0%
Tribal	0	0%
Private	1,138,453	96.0%

Principal Economic Activities (as total wages)

Agriculture/Forestry	11%
Retail Trade	14%
Services	14%
Government	43%
Other	18%

Population

There are approximately 14,301 people living in the Upper Crab-Wilson Basin. The primary population centers are Odessa and Medical Lake.



Surface Water Quality

Water Quality Assessment Map WRIA #43

Listed problem areas are highlighted (online).

For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Medical, West Lake

pH in Crab Creek

Nutrients in Medical West Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Spokane Valley Rathdrum Prairie Aquifer

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 194,219 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

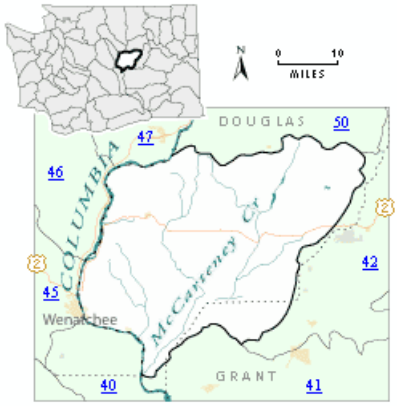
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #43

1. Onsite System Technical Assistance, Lincoln/Grant/Benton-Franklin/Spokane County Health
2. Baseline Water Quality Monitoring, Lincoln CD
3. DOE Water Quality Monitoring Program, Lincoln CD
4. Water Quality Implementation Program, Lincoln CD
5. Watershed Planning Program, Lincoln CD
6. Agricultural BMP Education Project, Lincoln CD
7. Direct Seed Minimum Till Program, Adams CD
8. GWMA Program, Adams CD
9. Fecal Baseline Study, Adams CD
10. Baseline Lower Palouse River Study, Adams CD
11. BMP Implementation Program, Adams CD
12. 2514 Watershed Planning Program, Stevens CD
13. Riparian Buffer Cost Share Program, Spokane CD
14. Nitrate Education Program, Benton-Franklin County Health
15. Columbia Basin Groundwater Management Area, Benton-Franklin County Health
16. Wellhead Protection Program, Spokane County Health
17. Site Hazard Assessment, Spokane County Health
18. Environmental Health Education, Spokane County Health
19. Chemical Physical Hazards Program, Spokane County Health
20. Aquifer Protection Program, Spokane County Health

Moses Coulee Basin - WRIA #44



WRIA #44 encompasses nearly 730,059 acres and is located within the Columbia Basin ecoregion. This watershed receives only 7 inches of rainfall per year. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is big sagebrush, bluebunch wheatgrass, Idaho fescue, and three-tip sagebrush.

Counties

Douglas (93%) Grant (7%)

Primary Towns and Cities

East Wenatchee Waterville Rock Island

Tribal Reservation Lands

None

Special Purpose Districts

Foster Creek Conservation District

Upper Grant Conservation District

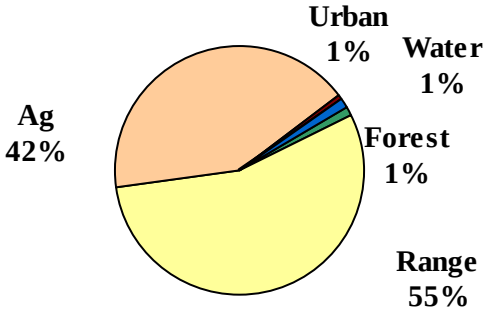
South Douglas Conservation District

Greater East Irrigation District

Wenatchee Irrigation District

Palisades Irrigation District

Land use in the Moses Coulee Basin



Land Base (in acres)

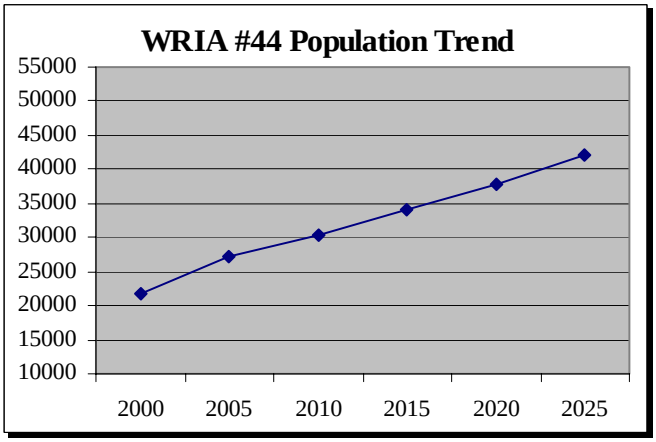
Federal	40,351	5.5%
State	61,061	8.4%
Local	0	0%
Tribal	0	0%
Private	628,646	86.1%

Principal Economic Activities (as total wages)

Agriculture	35%
Retail Trade	18%
Government	19%
Services	12%
Other	16%

Population

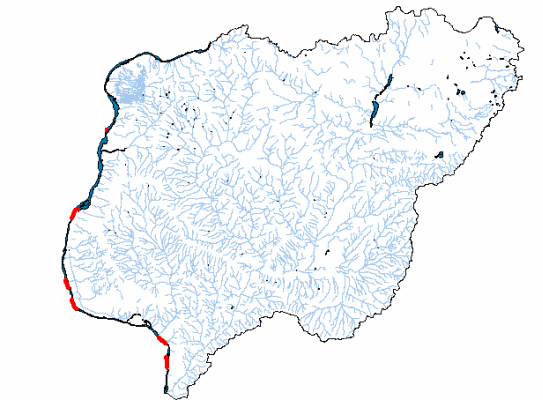
There are approximately 24,505 people living in the Moses Coulee Basin. The primary population centers are East Wenatchee and Waterville.



Surface Water Quality

Water Quality Assessment Map WRIA #44

Listed problem areas are highlighted (online).



For mapping updates see:
http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

Approximately 141,541 fallow acres yearly

Public Health
Commercial Shellfish Growing Areas

None

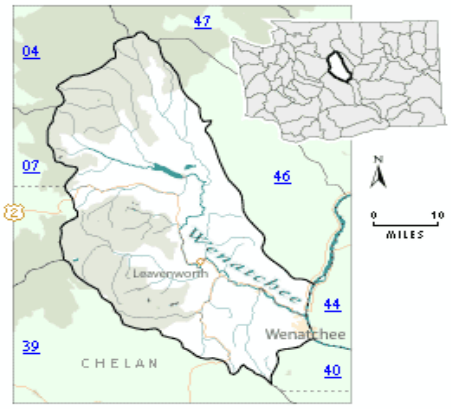
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #44

1. TMDL for Columbia River
2. Watershed Planning under the Watershed Management Act (2514 WAC)
3. Instream flows of Columbia River under 173.563 WAC, Ecology
4. Douglas County Wellhead Protection Study, Douglas County
5. Douglas County Watershed Plan Phase II, Foster CD
6. On-Site Sewage System Program, Chelan-Douglas/Benton-Franklin County Health
7. Nitrate Education Program, Benton-Franklin County Health
8. Columbia Basin Groundwater Management Area, Benton-Franklin County Health

Wenatchee Basin - WRIA #45



WRIA #45 encompasses about 878,338 acres. This watershed is located within the Cascades and Columbia Basin ecoregions. Rainfall averages 56 inches per year.

Steep, glaciated, mountains, ridges, and U-shaped valleys with high gradient streams and rivers. Typical soils include deep loams: silt loam, sandy loam, gravelly loam, and cindery sandy loam. Potential natural vegetation is ponderosa pine, Douglas-fir, grand fir, and pine grass. Mean temperature ranges from 16/32° (winter) to 48/78° (summer).

Counties

Chelan (100%)

Primary Towns and Cities

Wenatchee Cashmere

Leavenworth Peshastin

Tribal Reservation Lands

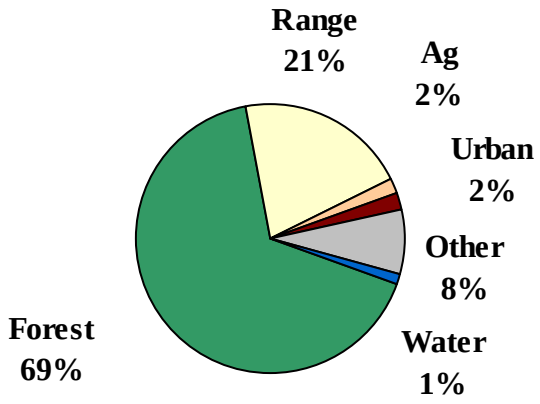
None

Special Purpose Districts

Chelan County Conservation District

Irrigation Districts: Beehive; Icicle; Lower Squilchuck; Peshastin; Stemilt; Wenatchee Reclamation; Wenatchee Heights; Wenatchee-Chewawa; Lower Stemilt; and Millerdale

Land use in the Wenatchee Basin



Land Base (in acres)

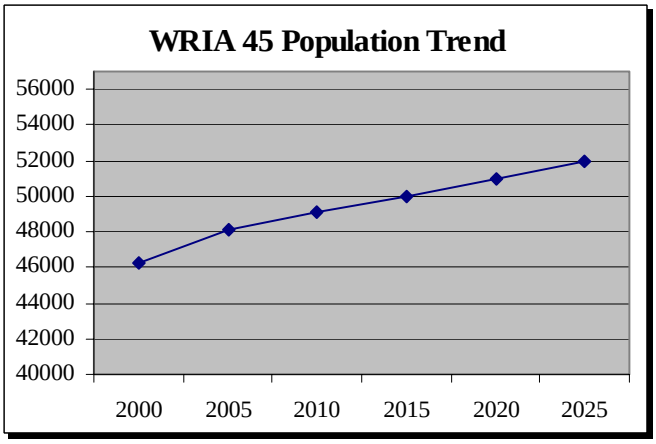
Federal	700,104	79.7%
State	15,743	1.8%
Local	0	0%
Tribal	0	0%
Private	162,490	18.5%

Principal Economic Activities (as total wages)

Agriculture	23%
Retail Trade	17%
Services	18%
Government	17%
Other	25%

Population

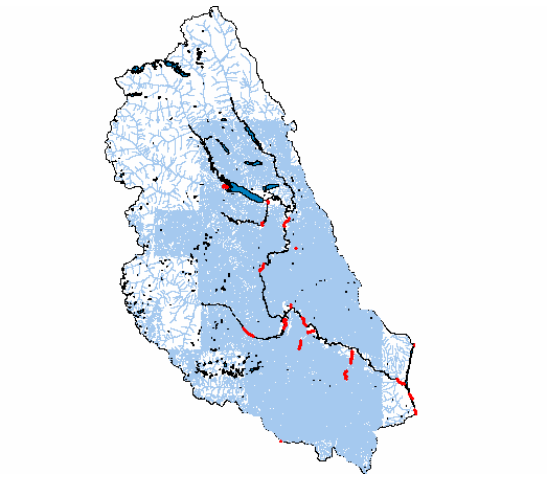
There are approximately 47,207 people living in the Wenatchee Basin. The primary population centers are Wenatchee, Cashmere, and Leavenworth.



Surface Water Quality

Water Quality Assessment Map WRIA #45

Listed problem areas are highlighted (online).



For mapping updates see:
http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Brender Creek, Chumstick Creek, and Mission Creek

High Temperature in Chiwaukum Creek, Icicle Creek, Little Wenatchee River, Mission Creek, Nason Creek, Peshastin Creek, and Wenatchee River

Dissolved Oxygen in Brender Creek, Chumstick Creek, Icicle Creek, and Wenatchee River

pH in Chumstick Creek, Icicle Creek, and Wenatchee River

Pesticides in Mission Creek

Low Instream Flows in Chumstick Creek, Icicle Creek, Mission Creek, Peshastin Creek, and Wenatchee River

Water Column Bioassay in Columbia River

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

Over appropriated; medium growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

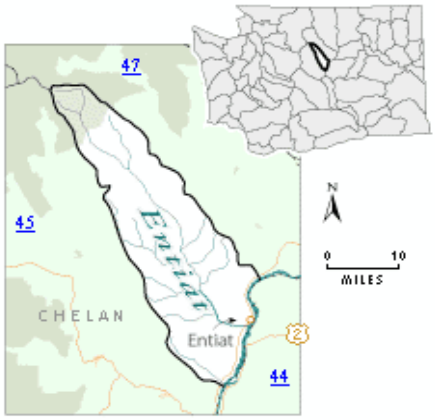
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #45

1. TMDL for Wenatchee River Basin
2. TMDL for Mission Creek
3. Wenatchee Watershed Implementation Plan, Chelan CD
4. TMDL & BMP Implementation Project, Chelan CD
5. Water Quality Subcommittee, Chelan CD
6. Coastal Protection Program, Chelan CD
7. Conservation Reserve Enhancement Program, Chelan CD
8. Instream flows of Wenatchee Basin, Ecology
9. US Forest Service Northwest Forest Plan
10. Lake Wenatchee Ground Water Assessment, Chelan County PUD#1
11. Kids in the Orchard Industry Education Program, Chelan CD
12. Kids in the Creek, Chelan CD
13. Envirothon, Chelan CD
14. On-Site Program, Chelan-Douglas County Health
15. Make A Difference Day, Chelan County
16. Wenatchee Watershed 2514 Planning Unit.

Entiat Basin - WRIA #46



WRIA #46 encompasses about 305,731 acres. This watershed is located within the Cascades and Columbia Basin ecoregions. It receives nearly 39 inches of rain per year. Steep, glaciated, mountains, ridges, and U-shaped valleys with high gradient streams and rivers. Typical soils include deep loams: silt loam, sandy loam, gravelly loam, and cindery sandy loam. Potential natural vegetation is ponderosa pine, Douglas-fir, grand fir, and pine grass. Mean temperature ranges from 16/32° (winter) to 48/78° (summer).

Counties

Chelan (100%)

Primary Towns and Cities

Entiat Ardenvoir

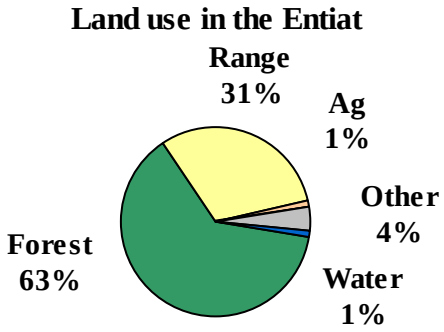
Tribal Reservation Lands

None

Special Purpose Districts

Chelan County Conservation District

Entiat Irrigation District



Land Base (in acres)

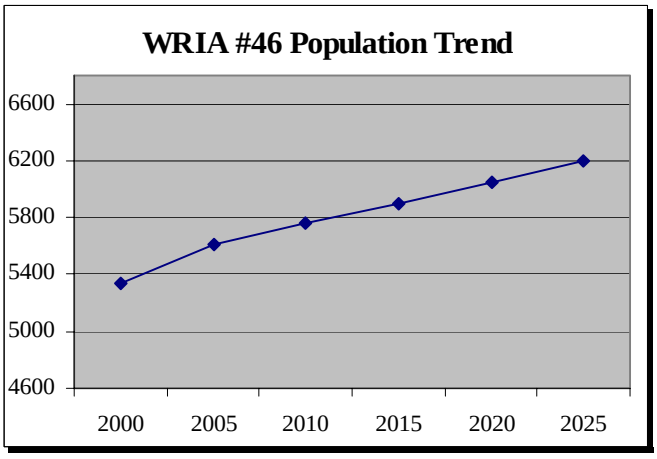
Federal	258,783	84.6%
State	15,548	5.1%
Local	0	
Tribal	0	
Private	31,400	10.3%

Principal Economic Activities (as total wages)

Agriculture	23%
Retail Trade	17%
Services	18%
Government	17%
Other	25%

Population

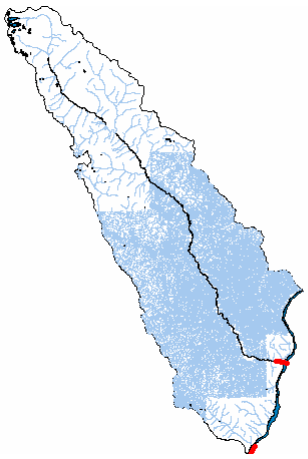
There are approximately 5,480 people living in the Entiat Basin. The primary population center is Entiat. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #46

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Low Instream Flow in Entiat River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

Flows not set; growth pressure

Air Quality (from windblown dust)

No concerns

Salmonid Stock Status

Impaired

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #46

1. Instream flows of Columbia River, Washington Department of Ecology
2. U.S. Forest Service Northwest Forest Plan
3. Entiat Valley Watershed Plan
4. Instream Flow Incremental Methodology, Chelan CD
5. Ecosystem Diagnosis & Treatment Program, Chelan CD
6. Entiat Demonstration Project, Chelan CD
7. Environmental Quality Incentive Program, Chelan CD
8. Conservation Commission Implementation Grant, Chelan CD
9. On-Site Program, Chelan-Douglas County Health
10. Entiat Watershed 2514 Planning Unit.

Chelan Basin - WRIA #47

WRIA #47 drains nearly 668,077 acres, including Lake Chelan. Located within the Cascades and Columbia Basin ecoregions, this watershed averages 52 inches of rain per year. Steep, glaciated, mountains, ridges, and U-shaped valleys with high gradient streams and rivers. Typical soils include deep loams: silt loam, sandy loam, gravelly loam, and cindery sandy loam. Potential natural vegetation is ponderosa pine, Douglas-fir, grand fir, and pine grass. Mean temperature ranges from 16/32° (winter) to 48/78° (summer).

Counties

Chelan	(98%)	Okanogan	(2%)

Primary Towns and Cities

Chelan	Manson	Lucerne
Holden	Stehekin	

Tribal Reservation Lands

Wapato Pt.

Special Purpose Districts

Chelan County Conservation District

Okanogan Conservation District

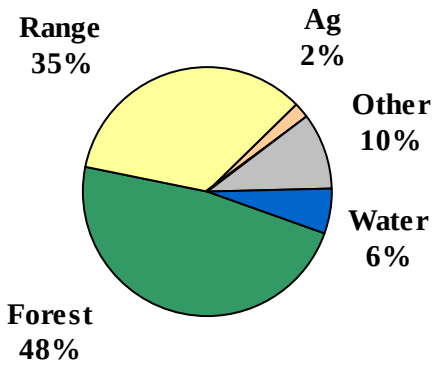
Chelan River Irrigation District

Isenhart Irrigation District

Chelan Falls Irrigation District

Lake Chelan Reclamation Irrigation District

Land Use in the Chelan Basin



Land Base (in acres)

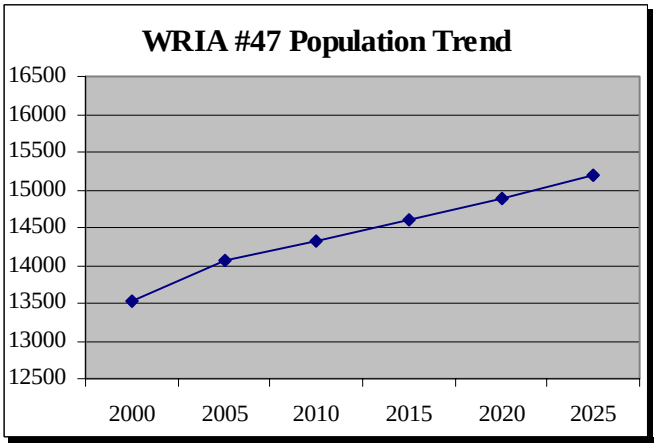
Federal	545,485	81.6%
State	13,379	2.0%
Local	0	
Tribal	0	
Private	109,212	16.4%

Principal Economic Activities (as total wages)

Agriculture	23%
Retail Trade	17%
Services	18%
Government	17%
Other	25%

Population

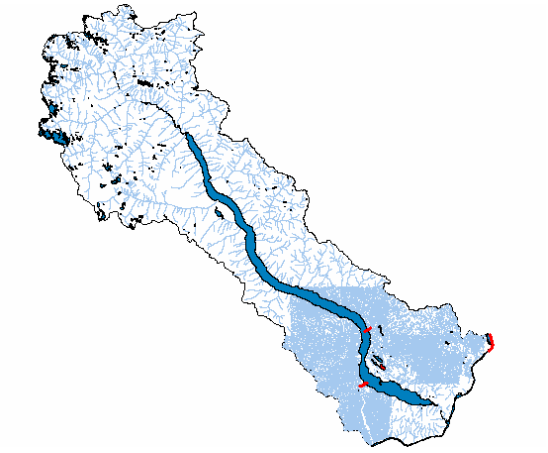
There are approximately 13,792 people living in the Chelan Basin. The primary population centers are Chelan and Manson. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #47

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Columbia River

Dissolved Oxygen in First Creek

pH in Mitchell Creek

Pesticides in Lake Chelan and Lake Roses

PCBs in Lake Chelan

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 5 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

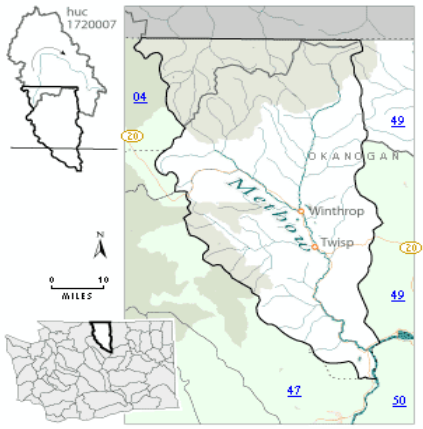
Domestic Water Supply

Within this WRIA are large community water systems that significantly utilize surface water sources.

3. Water Quality Plans and Implementation Efforts for WRIA #47

1. TMDL for Lake Chelan
2. TMDL for Roses Lake
3. Lake Chelan Water Quality Plan, Chelan County PUD #1
4. Lake Chelan Phosphorus Monitoring, Chelan County
5. Instream flows for the Columbia River under 173-563 WAC
6. Lake Chelan Phosphorus TMDL
7. Lake Chelan Water Quality Management Committee
8. US Forest Service Northwest Forest Plan

Methow Basin - WRIA #48



WRIA #48 encompasses nearly 1,358,544 acres in the Columbia Basin and Cascades ecoregion. High, glaciated ridges, plateaus, and U-shaped valleys with numerous wetlands. Permanent and intermittent streams are high gradient. Soils are typically fine sandy loam to stony coarse sandy loam. Potential natural vegetation is shrub alpine meadow, mixed sub-alpine fir, and some Douglas-fir at lower elevations. This watershed receives about 31 inches of rainfall per year. Average temperatures range from 13/27° (winter) to 45/70° (summer).

Counties

Okanogan (100%)

Principal Cities

Twisp	Pateros	Winthrop
Methow	Carlton	Mazama

Reservation Lands

None

Special Purpose Districts

Okanogan Conservation District

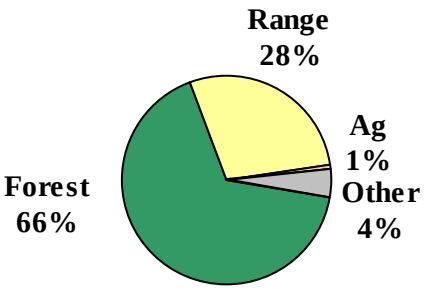
Methow-Okanogan Irrigation District

Methow Valley Irrigation District

Pateros Irrigation District

Wolf Creek Reclamation Irrigation District

Land Use in the Methow Basin



Land Base (in acres)

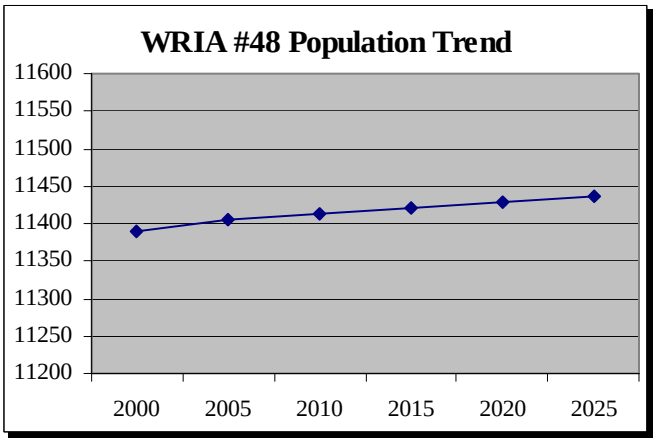
Federal	1,164,687	85.7%
State	65,320	4.8%
Local	0	0%
Tribal	0	0%
Private	128,536	9.5%

Principal Economic Activity (as total wages)

Agriculture/Forestry	30%
Retail Trade	16%
Services	15%
Government	21%
Other	18%

Population

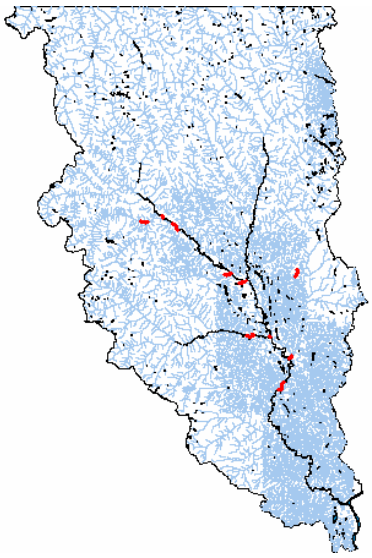
There are approximately 11,397 people living in the Methow Basin. The primary population centers are Twisp and Winthrop.



Surface Water Quality

Water Quality Assessment Map WRIA #48

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Methow River and Twisp River

Low Instream Flow in Beaver Creek, Chewack River, Early Winters Creek, Methow River, Twisp River, and Wolf Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

Over appropriated; low growth

Salmonid Stock Status

Threatened

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

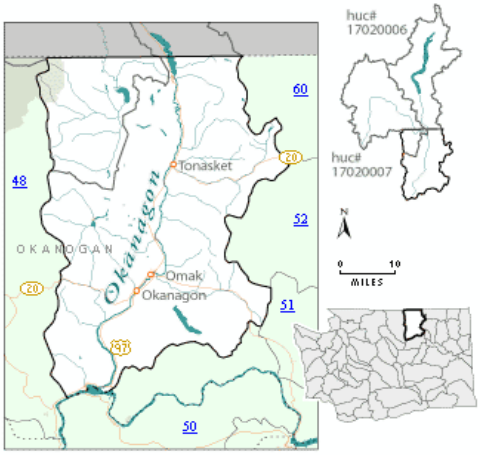
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #48

1. Facility plan for the Mazama core and upper Methow area, Okanogan County Water Resources Department
2. Methow Groundwater Management Area, Okanogan County Water Resourses Department
3. 2514 Watershed Planning, Okanogan County Water Resizes Department
4. Multi-objective River Corridor Plan for Methow Basin, Okanogan County Water Resizes Department
5. Twisp River Watershed Analysis, USFS
6. Libby Watershed Analysis, USFS
7. Middle Methow Watershed Analysis, USFS
8. Early Winters Creek Watershed Analysis, USFS
9. Lost River and Robinson Creek Watershed Analysis, USFS
10. Chewack River Watershed Analysis, USFS
11. Okanogan County Septic Education Project, Okanogan County Health
12. Irrigation Water Management Program, Okanogan CD
13. Conservation Reserve Enhancement Program (CREP) , Okanogan CD

Okanogan Basin - WRIA #49



WRIA #49 drains about 1,342,132 acres. This watershed is within the Columbia Basin, Cascades, and Northern Rockies. High, glaciated ridges, plateaus, and U-shaped valleys with numerous wetlands. Permanent and intermittent streams are high gradient. Soils are typically fine sandy loam to stony coarse sandy loam. Potential natural vegetation is shrub alpine meadow, mixed sub-alpine fir, with some Douglas-fir at lower elevations. Average rainfall is 15 inches per year. Temperature ranges from 13/27° (winter) to 45/70° (summer).

Counties

Okanogan (100%)

Primary Towns and Cities

Omak Okanogan Brewster

Oroville

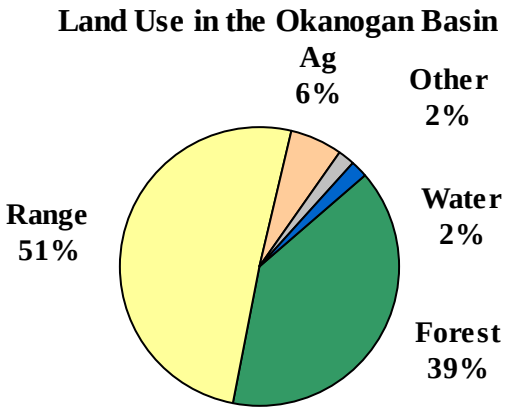
Tribal Reservation Lands

Colville Confederated Tribes

Special Purpose Districts

Okanogan Conservation District

Irrigation Districts: Aenas Lake; Alta Vista; Helensdale Reclamation; Methow-Okanogan; Okanogan; Oroville-Tonasket; and Whitestone Reclamation



Land Base (in acres)

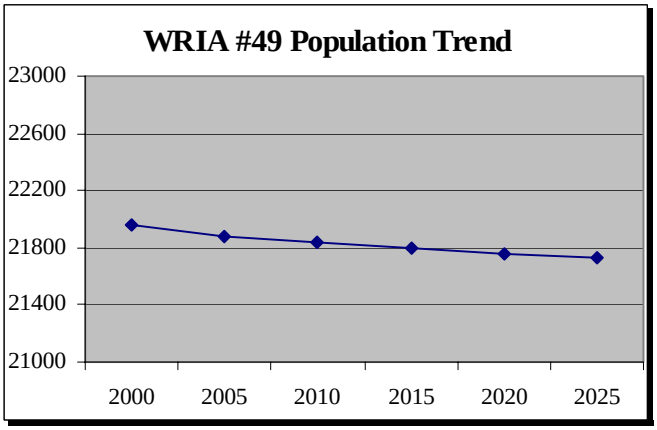
Federal	235,870	17.6%
State	275,393	20.5%
Local	0	0%
Tribal	279,385	20.8%
Private	551,482	41.1%

Principal Economic Activities (as total wages)

Agriculture/Forestry	30%
Retail Trade	16%
Services	15%
Government	21%
Other	18%

Population

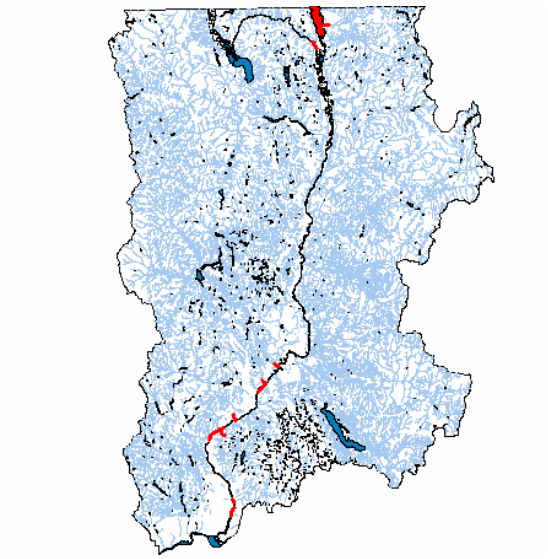
There are approximately 21,918 people living in the Okanogan Basin. The primary population centers are Omak and Okanogan. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #49

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Okanogan River

High Temperature in Okanogan River and Similkameen River

Dissolved Oxygen in Okanogan River

Pesticides in Ninemile Creek, Okanogan River, Osoyoos Lake, Tallant Creek, and Unnamed Creek

PCBs in Okanogan River

Low Instream Flow in Salmon Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

Over appropriated; low growth

Salmonid Stock Status

Listed in the Simikameen and Okanogan Rivers

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

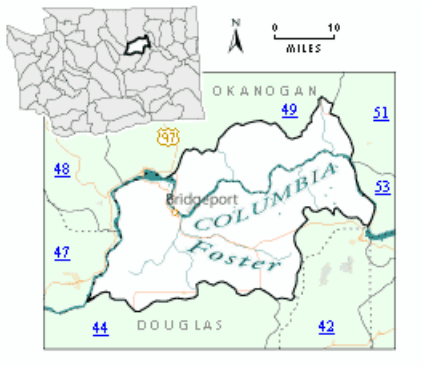
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #49

1. TMDL for Okanagon River
2. TMDL for Similkameen River
3. Okanogan River Water Quality Management Plan, Okanogan County Water Resources Department
4. Salmon Creek Fish Enhancement
5. Omak Creek Planning Report, 1994
6. Tonasket Creek Watershed Assessment, USFS
7. Bonaparte Creek Watershed Assessment, USFS
8. Okanogan County Septic Education, Okanogan County Health
9. Water Quality Monitoring Program, Okanogan CD
10. Irrigation Water Management Program, Okanogan CD
11. Conservation Reserve Enhancement Program, Okanogan CD

Foster Basin - WRIA #50



WRIA #50 encompasses about 577,255 acres. Located within the Columbia Basin and Northern Rockies ecoregion, this watershed receives 10 inches of rain a year. This valley was impacted by the melting of the Okanogan lobe of the Wisconsin Glacier. As the glacier melted, it retreated up the valley leaving behind a blanket of glacial till. Up to 50 feet thick, the till is composed of clay, silt, sand, gravel, cobbles, and boulders. This soil type supports native vegetation composed of big sagebrush, bluebunch wheatgrass, three-tip sage, and Idaho fescue.

Counties

Douglas	(74%)
Okanogan	(26%)

Primary Towns and Cities

Bridgeport Mansfield

Tribal Reservation Lands

Colville Confederated Tribes

Special Purpose Districts

Okanogan Conservation District

Foster Creek Conservation District

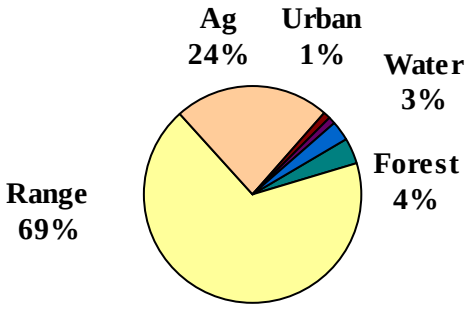
Bridgeport Irrigation District #1

Bridgeport Bar Irrigation District

Brewster Flat Irrigation District;

Pateros Irrigation District;

Land Use in the Foster Basin



Land Base (in acres)

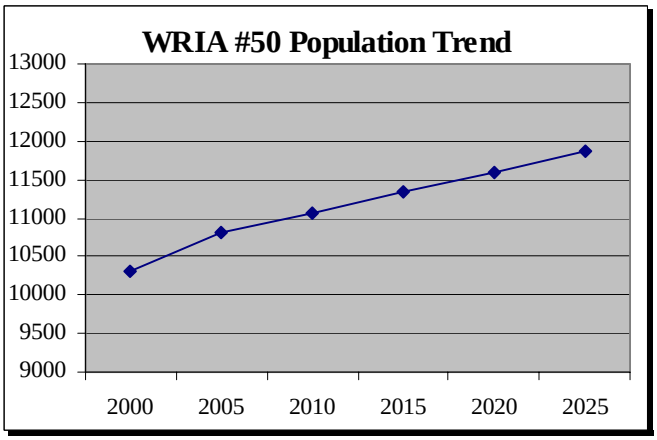
Federal	10,444	1.8%
State	62,332	10.7%
Local	0	
Tribal	152,382	26.2%
Private	355,254	61.3%

Principal Economic Activities (as total wages)

Agriculture	35%
Retail Trade	18%
Government	19%
Services	12%
Other	16%

Population

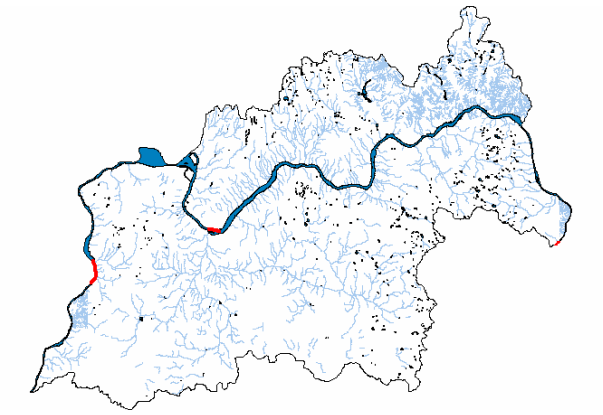
There are approximately 10,564 people living in the Foster Basin. The primary population centers are Bridgeport and Mansfield.



Surface Water Quality

Water Quality Assessment Map WRIA #50

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

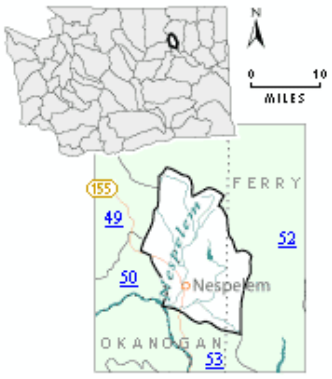
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #50

1. 2514 Watershed Planning
2. Wellhead Protection Phase 1 Study, Douglas County
3. East Foster Creek Water Quality Project, Foster CD
4. Douglas County Watershed Plan Phase II, Foster CD
5. On-site Sewage Program, Chelan-Douglas County Health

Nespelem Basin - WRIA #51



WRIA #51 encompasses about 144,375 acres. This watershed is located within the Columbia Basin and Northern Rockies ecoregions. This valley was impacted by the melting of the Okanogan lobe of the Wisconsin Glacier. As the glacier melted, it retreated up the valley leaving behind a blanket of glacial till. Up to 50 feet thick, the till is composed of clay, silt, sand, gravel, cobbles, and boulders. This soil supports native vegetation composed of big sagebrush, bluebunch wheatgrass, three-tip sage, and Idaho fescue. Average rainfall is 10 inches per year.

Counties

Okanogan (85%)

Ferry (15%)

Special Purpose Districts

Okanogan Conservation District

Ferry Conservation District

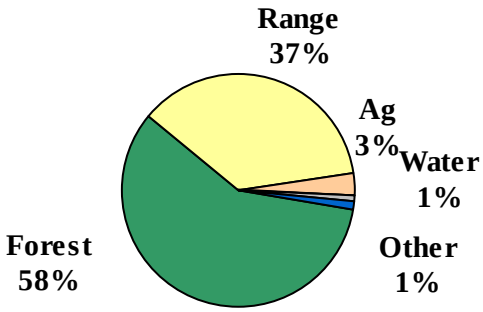
Primary Towns and Cities

Nespelem Colville Indian Agency

Tribal Reservation Lands

Colville Confederated Tribes

Land use in the Nespelem Basin



Land Base (in acres)

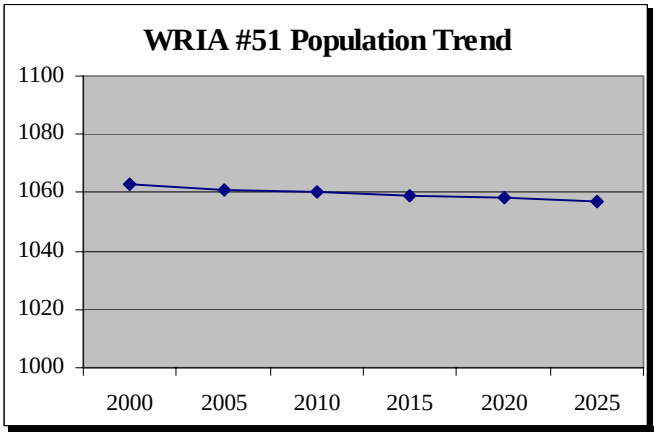
Federal	0	
State	0	
Local	0	
Tribal	144,542	99.9%
Private	166	.1%

Principal Economic Activities (as total wages)

Agriculture/Forestry	30%
Retail	16%
Services	15%
Government	21%
Other	18%

Population

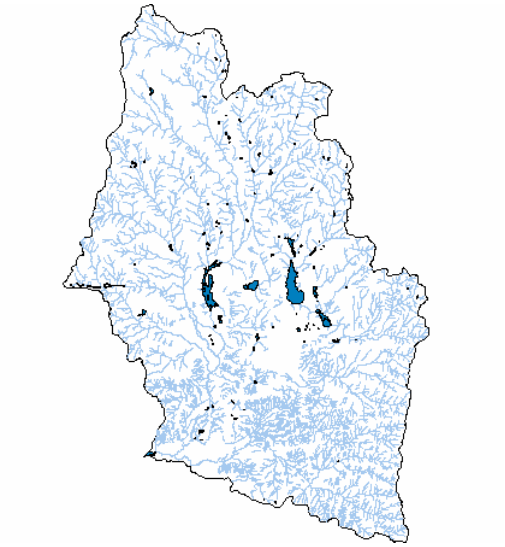
There are approximately 1,062 people living in the Nespelem Basin. The primary population center is Nespelem. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #51

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Air Quality (from windblown dust)

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Public Health
Commercial Shellfish Growing Areas

None

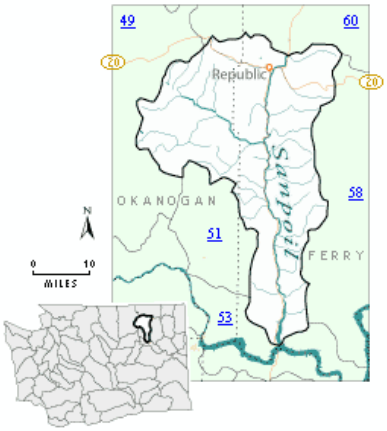
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #51

None known

Sanpoil Basin - WRIA #52



WRIA #52 encompasses about 628,409 acres. It is located within the Northern Rockies and Columbia Basin ecoregions. This watershed receives nearly 16 inches of rainfall per year. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 8,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from acidic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Ferry (67%) Okanogan (33%)

Primary Towns and Cities

Republic Keller

Tribal Reservation Lands

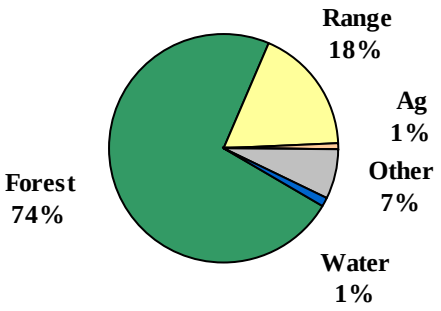
Colville Confederated Tribes

Special Purpose Districts

Ferry Conservation District

Okanogan Conservation District

Land use in the Sanpoil Basin



Land Base (in acres)

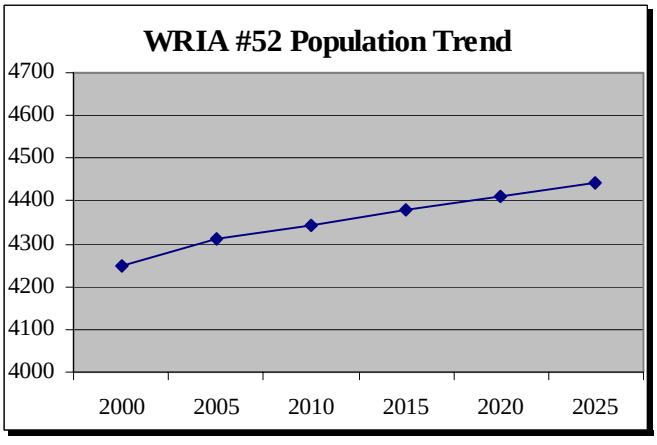
Federal	188,811	29.6%
State	14,551	2.5%
Local	0	0%
Tribal	330,200	52.9%
Private	94,846	15.0%

Principal Economic Activities (as total wages)

Manufacturing	12%
Retail Trade	13%
Services	14%
Government	39%
Agriculture/Forestry	3%

Population

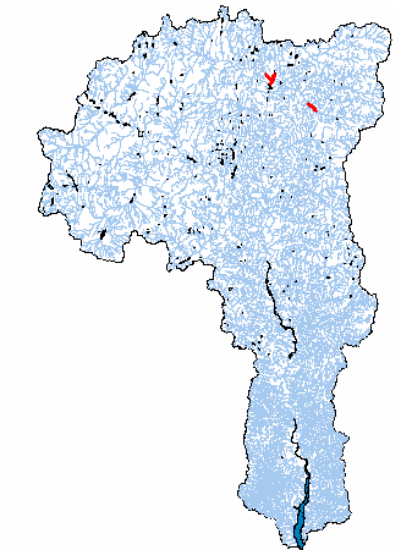
There are approximately 4,281 people living in the Sanpoil Basin. The primary population center is Republic. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #52

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Dissolved Oxygen in Granite Creek and Sanpoil River

pH in O'Brien Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

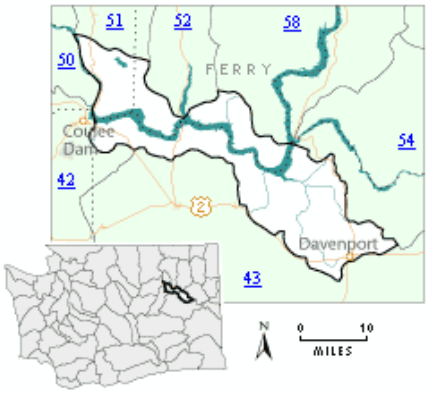
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #52

1. Ferry Lakes Invaders Project, Ferry CD
2. Sanpoil Basin Hydrogeology Study, City of Republic
3. Onsite Sewage Education Program, Northeast Tri-Counties Health
4. Headwaters of the Sanpoil--WQ Monitoring and Riparian Restoration, Ferry CD

Lower Lake Roosevelt Basin - WRIA #53



WRIA #53 encompasses about 326,263 acres. This watershed is part of the Columbia Basin and Northern Rockies ecoregions. Average annual rainfall is 11 inches. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is ponderosa pine, bluebunch wheatgrass, and Idaho fescue.

Counties

Lincoln	(63%)	Ferry	(23%)
Okanogan	(14%)	Grant	(<1%)

Primary Towns and Cities

Davenport	Coulee Dam	Elmer City
Belvedere	Seatons Grove	Kootzville
Lone Pine	Lincoln	

Tribal Reservation Lands

Colville Confederated Tribes

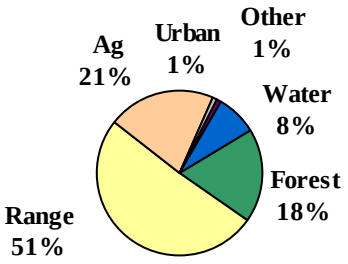
Special Purpose Districts

Lincoln Conservation District

Ferry Conservation District

Okanogan Conservation District

Land Use in the Lower Lake Roosevelt Basin



Land Base (in acres)

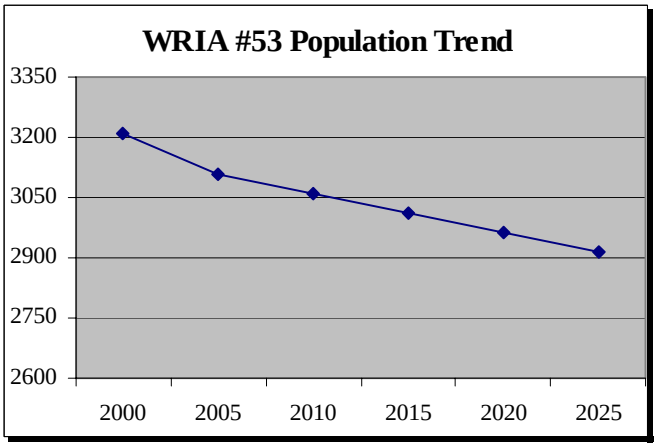
Federal	32,283	9.9%
State	8,9,22	2.7%
Local	0	0%
Tribal	102,205	31.3%
Private	182,852	56.1%

Principal Economic Activities (as total wages)

Agriculture/Forestry	11%
Retail Trade	14%
Services	14%
Government	43%
Other	18%

Population

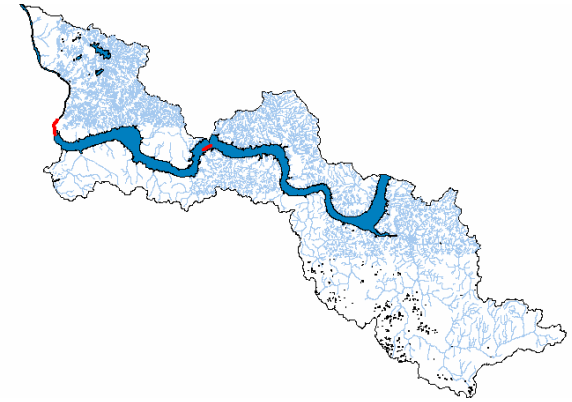
There are approximately 3,158 people living in the Lower Lake Roosevelt Basin. The primary population centers are Davenport and Coulee Dam. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #53

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Franklin D. Roosevelt Lake

Dissolved Oxygen in Franklin D. Roosevelt Lake

Sediment Bioassay in Franklin D. Roosevelt Lake

Total Dissolved Gas in Columbia River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 5 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #53

1. Transboundary Gas Group working on dissolved gas in Columbia River system
2. Agricultural BMP Education Project, Lincoln CD
3. On-site Sewage System Technical Assistance, Lincoln/Northeast Tri-Counties Health
4. Water Quality Implementation Program, Lincoln CD

Lower Spokane Basin - WRIA #54

WRIA #54 encompasses about 566,165 acres. This watershed is located within the Northern Rockies and Columbia Basin ecoregion. Average annual rainfall is 14 inches per year. The scablands and loess islands were formed as immense floods periodically broke through the ice dams blocking glacial Lake Missoula during the Pleistocene. Soils are typically deep loess on hills and foothills. Potential natural vegetation is ponderosa pine, serviceberry, bluebunch wheatgrass, and Idaho fescue.

Counties

Stevens	(49%)	Spokane	(28%)
Lincoln	(23%)		

Primary Towns and Cities

Spokane	Medical Lake	Airway Heights
Wellpinit	Ford	Reardan

Tribal Reservation Lands

Spokane Tribe

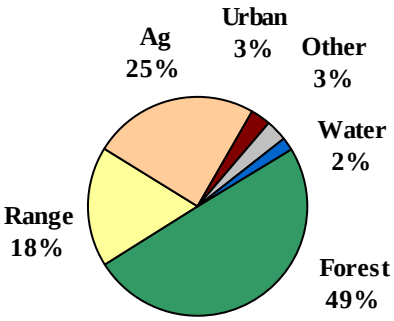
Special Purpose Districts

Stevens County Conservation District

Spokane County Conservation District

Lincoln County Conservation District

Land use in the Lower Spokane



Land Base (in acres)

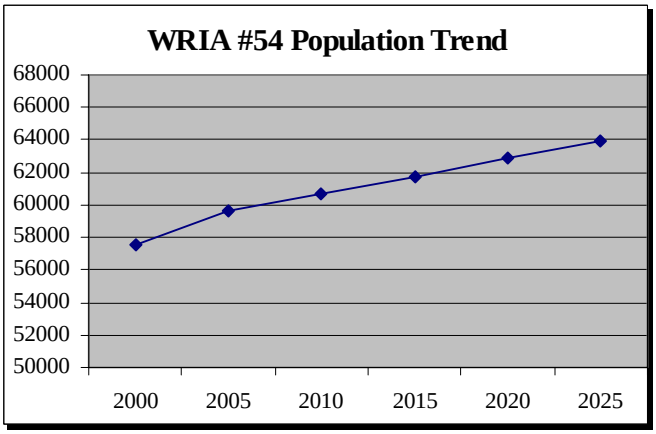
Federal	14,903	2.6%
State	37,097	6.6%
Local	667	0.2%
Tribal	137,860	24.3%
Private	375,636	66.3%

Principal Economic Activities (as total wages)

Agriculture/Forestry	1%
Manufacturing	14%
Retail Trade	18%
Services	27%
Government	19%
Other	21%

Population

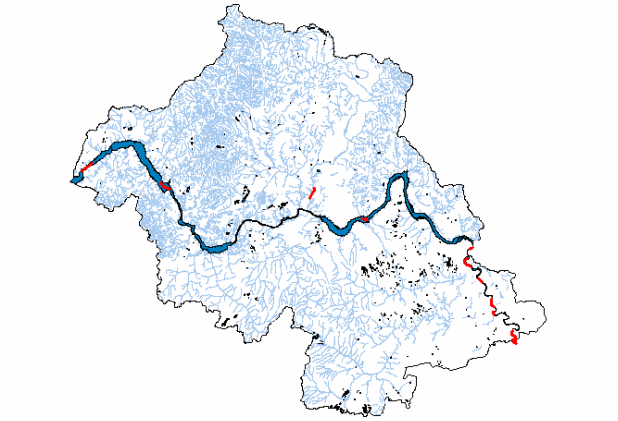
There are approximately 58,563 people living in the Lower Spokane Basin. The primary population centers are Spokane and Medical Lake. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #54

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Chamokane Creek and Spokane River

pH in Spokane River

Metals in Spokane River

Nutrients in Spokane River

PCBs in Long Lake and Spokane River

Sediment Bioassay in Spokane River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Spokane Valley Rathdrum Prairie Aquifer

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

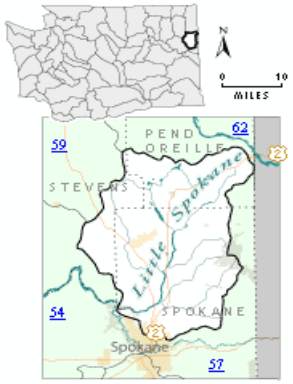
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #54

1. TMDL for Spokane River
2. TMDL for Long Lake
3. Stormwater Management Plan and Implementation, City of Spokane
4. Spokane-Rathdrum Prairie Aquifer Protection Program, City of Spokane/Spokane County Utilities/Water Quality Management Program
5. Water Quality Education and Public Involvement, Spokane County Public Works/Utilities/Water Quality Management Program
6. Sustainable Landscaping Project, Spokane County Cooperative Extension
7. On-site System Education, Spokane County Health
8. Riparian Buffer Cost Share Program, Spokane CD
9. Wellhead Protection Program, Spokane Regional Health/City of Spokane/Spokane Aquifer Joint Board
10. Site Hazard Assessment, Spokane Regional Health
11. Environmental Health Education, Spokane County Health
12. Aquifer Protection Program, Spokane Regional Health.
13. Spokane County Stormwater Utility.
14. FERC relicensing of the Spokane River Dams

Little Spokane Basin - WRIA #55



WRIA #55 encompasses about 433,348 acres within the Northern Cascades and Columbia Basin ecoregions. This watershed averages 21 inches of rainfall per year. High mountains are the dominant feature of this region. Elevations range from 1,300 to 6,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from basic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Spokane	(62%)	Pend Oreille	(25%)
Stevens	(13%)		

Primary Towns and Cities

Deer Park	Mead	Colbert
Clayton	Elk	Chatteroy

Tribal Reservation Lands

None

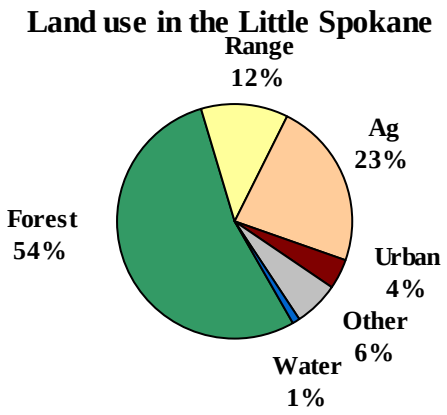
Special Purpose Districts

Spokane County Conservation District

Pend Oreille Conservation District

Stevens County Conservation District

North Spokane #8 Irrigation District



Land Base (in acres)

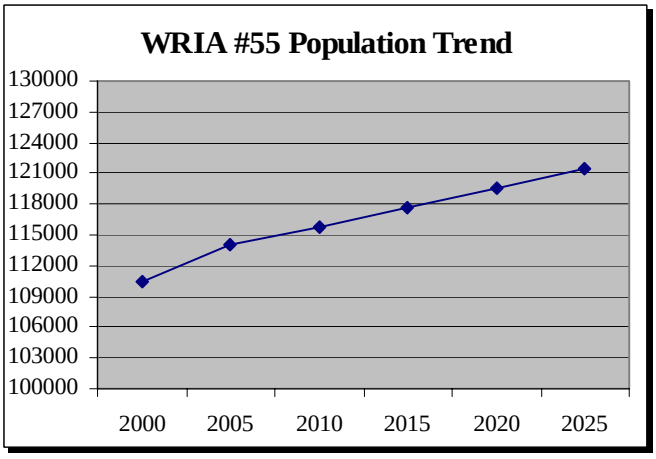
Federal	0	0%
State	20,246	4.7%
Local	1,449	0.4%
Tribal	0	0%
Private	411,652	94.9%

Principal Economic Activities (as total wages)

Manufacturing	14%
Retail Trade	18%
Services	27%
Government	19%
Other	22%

Population

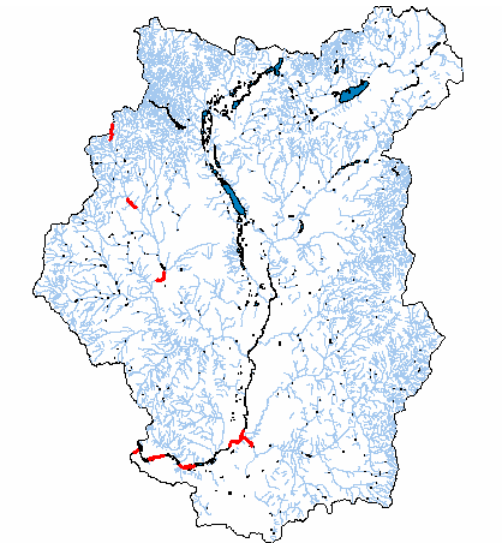
There are approximately 112,187 people living in the Little Spokane Basin. The primary population centers are Deer Park and Mead. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #55

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Dragoon Creek and Little Spokane River

High Temperature in Deadman Creek and Little Spokane River

Dissolved Oxygen in Dragoon Creek

pH in Deadman Creek and Little Spokane River

Low Instream Flow for the Little Spokane River

PCBs in Little Spokane River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

Spokane Valley Rathdrum Prairie Aquifer

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #55

1. TMDL for Spokane River
2. TMDL for Dragoon Creek
3. Instream flows set in accordance with 173-555 WAC, Ecology
4. Watershed Initial Assessment, 1995
5. Wellhead Protection Program, Phase 1, City of Spokane
6. Spokane-Rathdrum Prairie Aquifer Protection, City of Spokane
7. Deer Park Ground Water Management Area, Spokane County Public Works/Utilities/Water Quality Management Program
8. On-site Sewage System Education Program, Spokane/Northeast Tri-Counties Health
9. Dragoon Creek Riparian Buffer Project, Spokane CD
10. Little Spokane Watershed Management Plan, Spokane CD/Pend Oreille CD
11. Wellhead Protection Program, Spokane Regional Health
12. Environmental Health Education, Spokane Regional Health
13. Aquifer Protection Program, Spokane Regional Health

14. Spokane Valley – Rathdrum Prairie Aquifer Protection Program, Spokane County Utilities/Water Quality Management Program
15. Water Quality Education & Public Involvement, Spokane County Public Works/Utilities/Water Quality Management Program
16. Watershed Planning Program, Spokane County Public Works/Utilities/Water Quality Management Program
17. U.S. Geologic Survey NAWQA (study of the basin), USGS.
18. Spokane County Stormwater Utility.

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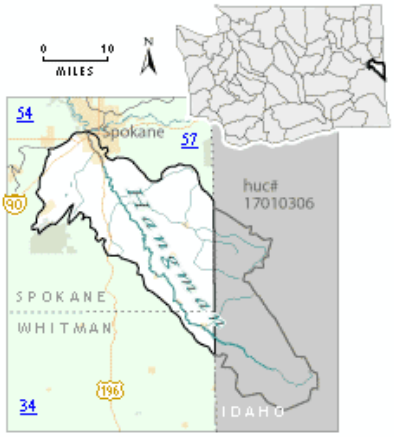
Hangman Basin - WRIA #56



WRIA #56 encompasses about 290,690 acres. Located within the Columbia Basin ecoregion, this basin was impacted by the immense floods from glacial Lake Missoula that periodically broke through the ice dam. The floods scoured the loess covering the plateau. Potential natural vegetation on these loess islands include big sagebrush, three-tip, bluebunch wheatgrass and Idaho fescue. Receives an average annual rainfall of 18 inches.

Counties

Spokane	(95%)
Whitman	(5%)

Primary Towns and Cities

Spokane	Cheney	Tekoa
Rockford	Fairfield	Spangle

Tribal Reservation Lands

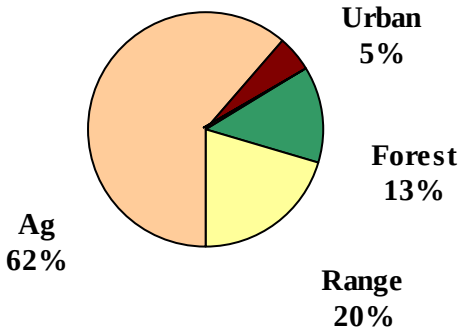
None

Special Purpose Districts

Spokane County Conservation District

Pine Creek Conservation District

Land Use in the Hangman Basin



Land Base (in acres)

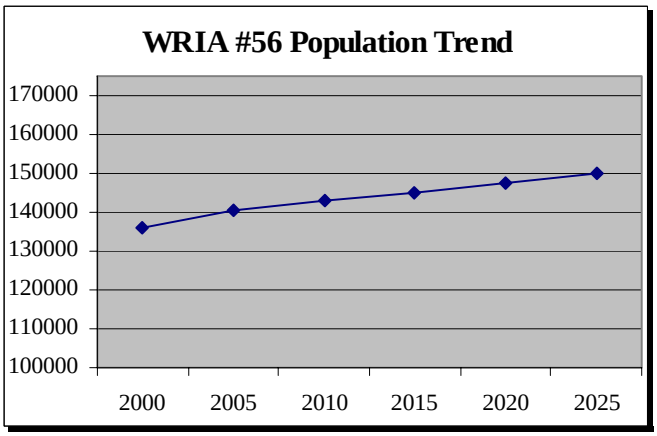
Federal	1,900	.7%
State	3,158	1.0%
Local	760	.3%
Tribal	0	0%
Private	284,870	98.0%

Principal Economic Activities (as total wages)

Manufacturing	12%
Retail Trade	20%
Services	29%
Government	16%
Other	23%

Population

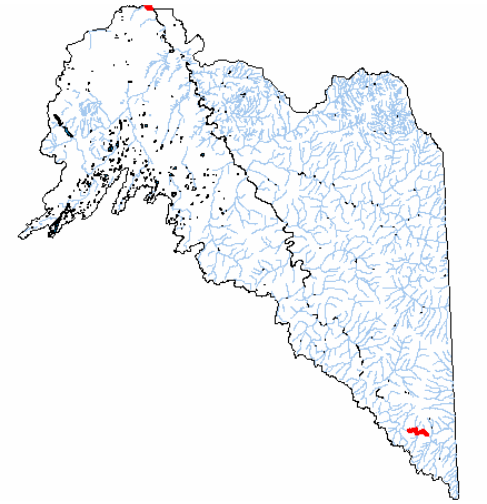
There are approximately 138,306 people living in the Hangman Basin. The primary population centers are Spokane and Cheney. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #56

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Hangman Creek

High Temperature in Hangman Creek

Dissolved Oxygen in Hangman Creek

pH in Hangman Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

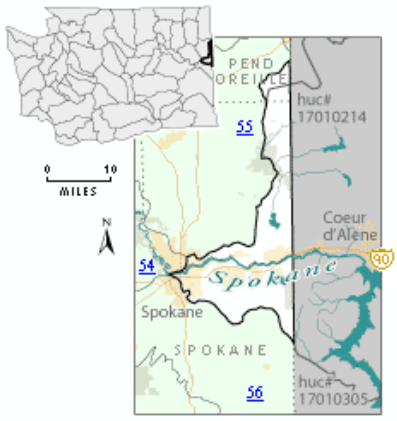
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #56

1. TMDL for Spokane River
2. TMDL for Hangman Creek
3. Hangman Creek Flood Hazard Management Plan, Spokane CD
4. Hangman Creek Watershed Implementation, Spokane CD
5. ESHB2514 Watershed Planning Program, Spokane CD
6. Rattler Rum Implementation Project, Spokane CD
7. Spokane Valley-Rathdrum Prairie Aquifer Protection, City of Spokane/Spokane County Public Works/Utilities/Water Quality Management Program
8. Water Quality Public Education and Involvement, Spokane County Public Works/Utilities/Water Quality Management Program
9. On-site System Education, Spokane Regional Health
10. Wellhead Protection Program, Spokane Regional Health/City of Spokane
11. Environmental Health Education, Spokane County Health
12. Aquifer Protection Program, Spokane County Health
13. Water Quality Technical Assistance Program, Pine Creek CD
14. Water Quality Education Program, Pine Creek CD
15. Watershed Planning Program, Spokane CD.
16. Spokane County Stormwater Utility.

Middle Spokane Basin - WRIA #57



WRIA #57 encompasses about 183,329 acres.

This small watershed is located within the Columbia Basin and Northern Rockies ecoregions. Average annual rainfall is 22 inches per year. This basin was impacted by the immense floods from glacial Lake Missoula that periodically broke through the ice dam. The floods scoured the loess covering the plateau. Potential natural vegetation on these loess islands include big sagebrush, three-tip, bluebunch wheatgrass and Idaho fescue.

Counties

Spokane	(93%)	Pend Oreille	(7%)

Primary Towns and Cities

Spokane	Millwood	Trentwood
Chester	Opportunity	Greenacres

Tribal Reservation Lands

None

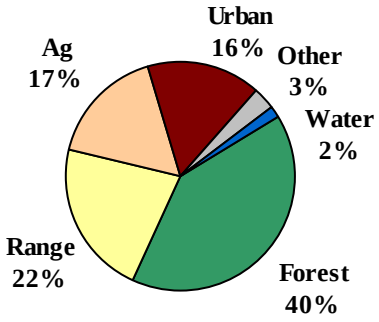
Special Purpose Districts

Spokane County Conservation District

Pend Oreille Conservation District

Irrigation Districts: Carnhope #7; Consolidated #19; Hutchinson #16; Moab #20; Model #8; Orchard Ave. #6; Pasadena Park #17; Trentwood #3; and Vera #15

Land Use in the Middle Spokane Basin



Land Base (in acres)

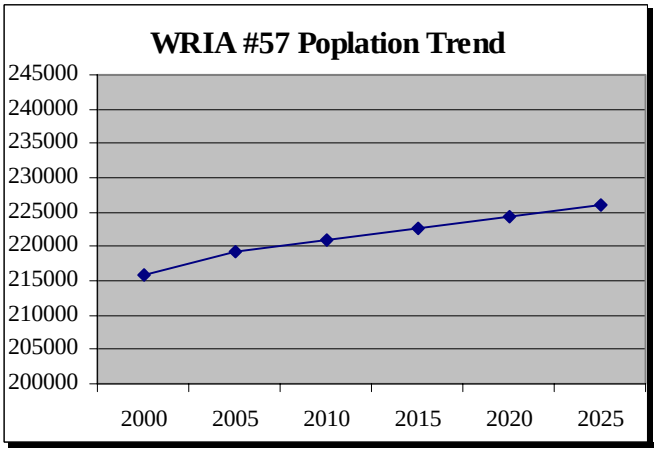
Federal	0	0%
State	12,199	6.7%
Local	3,579	2.0%
Tribal	0	0%
Private	167,550	91.3%

Principal Economic Activities (as total wages)

Manufacturing	12%
Retail Trade	20%
Services	29%
Government	16%
Other	23%

Population

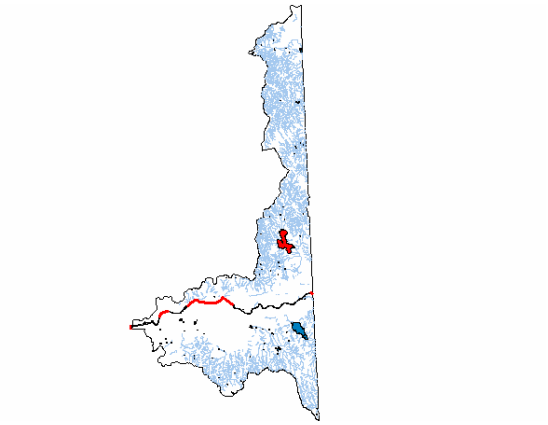
There are approximately 217,547 people living in the Middle Spokane Basin. The primary population center is Spokane.



Surface Water Quality

Water Quality Assessment Map WRIA #57

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Dissolved oxygen in Spokane River

Metals in Spokane River

Nutrients in Newman Lake

PCBs in Spokane River

Sediment Bioassay in Spokane River

Arsenic in Spokane River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels detected >10 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

Spokane Valley Rathdrum Prairie Aquifer

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

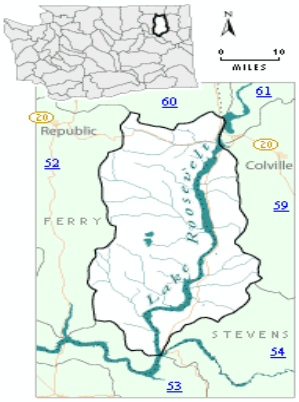
Domestic Water Supply

No significant use of surface water sources

33. Water Quality Plans and Implementation Efforts for WRIA #57

1. TMDL for Spokane River
2. TMDL for Liberty Lake
3. Spokane Valley-Rathdrum Prairie Aquifer Protection, Spokane County Public Works/Utilities/Water Quality Management Program
4. Septic Tank Elimination Project, City of Spokane
5. Spokane River Phosphorus Management Plan
6. U.S. Geologic Survey NAWQA study of the basin, USGS
7. Riparian Buffer Cost Share Program, Spokane CD
8. Watershed Planning Program, Spokane County Public Works/Utilities/Water Quality Management Program
9. Onsite Sewage Education Program, Spokane Regional Health
10. Wellhead Protection Program, Spokane Regional Health
11. Environmental Health Education, Spokane Regional Health
12. Aquifer Protection Program, Spokane Regional Health
13. Water Quality Education & Public Involvement, Spokane County Public Works/Utilities/Water Quality Management Program.
14. Spokane County Stormwater Utility.
15. Thompson Creek Watershed Analysis, DNR
16. Avista Water Quality Studies for FERC relicensing of Spokane River dams.

Middle Lake Roosevelt Basin - WRIA #58



WRIA #58 encompasses about 707,382 acres of Northern Rockies and Columbia Basin ecoregions. This watershed receives an average annual rainfall of 18 inches per year. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 8,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from acidic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Ferry	(72%)	Stevens	(28%)

Primary Towns and Cities

Fruitland	Hunters	Cedonia
Kewa	Inchellum	Gifford

Tribal Reservation Lands

Colville Confederated Tribes

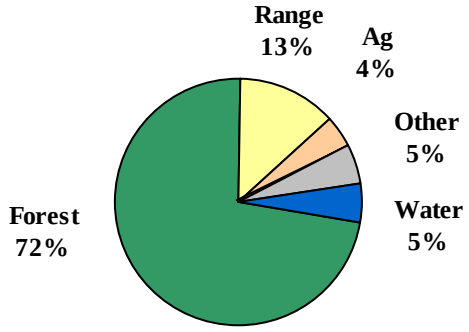
Spokane Tribe

Special Purpose Districts

Stevens County Conservation District

Ferry Conservation District

Land Use in the Middle Lake Roosevelt Basin



Land Base (in acres)

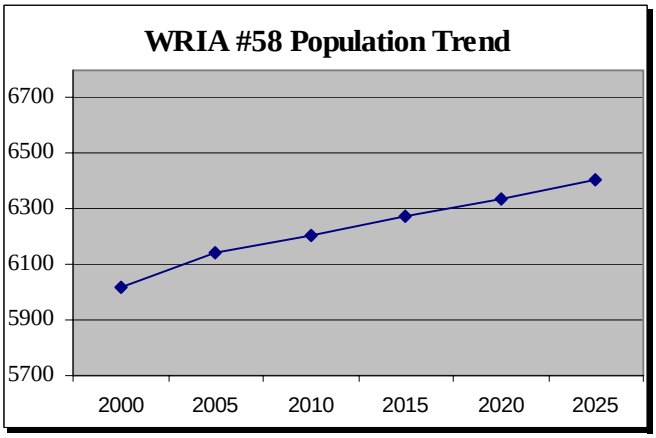
Federal	156,989	22.2%
State	26,141	3.7%
Local	0	0%
Tribal	365,304	51.6%
Private	158,947	22.5%

Principal Economic Activities (as total wages)

Manufacturing	12%
Retail Trade	13%
Services	14%
Government	39%
Agriculture/Forestry	3%

Population

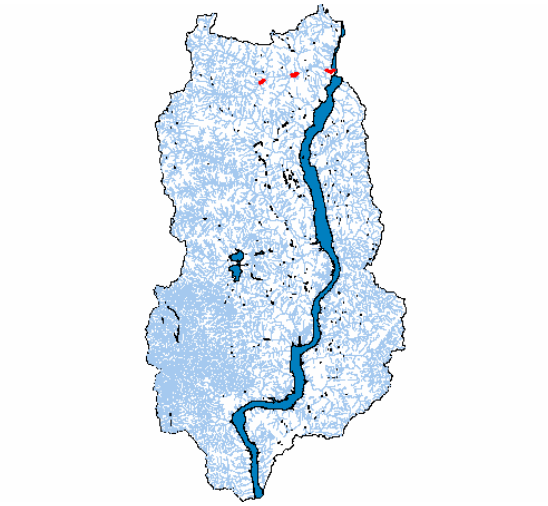
There are approximately 6,081 people living in the Middle Lake Roosevelt Basin. The primary population centers are Fruitland and Cedonia. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #58

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

High Temperature in Sherman Creek

Mercury in Franklin D. Roosevelt Lake

Sediment Bioassay in Franklin D. Roosevelt Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #58

1. Phase II lake restoration for Twin Lakes
2. U.S. Forest Service and Ferry Conservation District, solutions to temperature problems in Sherman Creek
3. On-site Sewage Education Program, Northeast Tri-Counties Health
4. Lake Roosevelt Water Festival, Ferry CD, National Park Service, and US Forest Service

Colville Basin - WRIA #59

WRIA #59 drains about 652,084 acres. This watershed is part of the Northern Rockies ecoregion. Average annual rainfall is 18 inches per year in the valley bottom, and 36 in the higher elevations. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 6,880 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from basic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Stevens	(99%)	Pend Oreille	(1%)

Primary Towns and Cities

Colville	Chewelah	Kettle Falls
Springdale	Valley	Addy

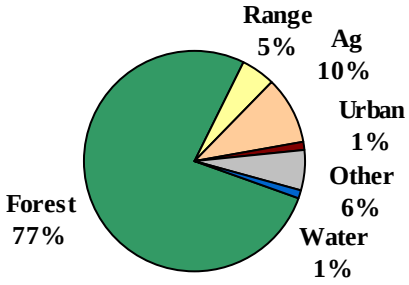
Tribal Reservation Lands

None

Special Purpose Districts

Stevens County Conservation District

Land Use in the Colville Basin



Land Base (in acres)

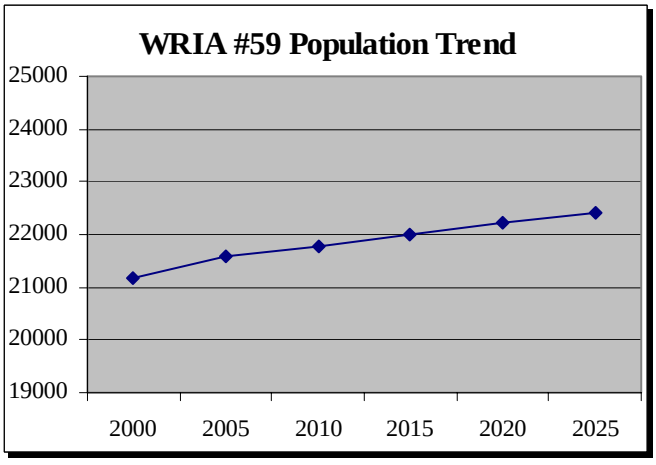
Federal	156,623	24.0%
State	74,156	11.4%
Local	0	0%
Tribal	0	0%
Private	421,304	64.6%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Manufacturing	21%
Retail Trade	17%
Services	24%
Government	25%
Other	11%

Population

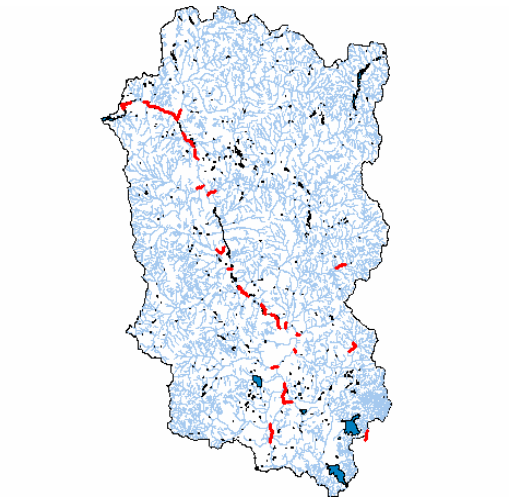
There are approximately 21,365 people living in the Colville Basin. The primary population centers are Colville, Chewelah, and Kettle Falls. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #59

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

The most recent 303(d) list is from 1998; for possible updates see:

http://www.ecy.wa.gov/programs/wq/303d/index.html

Fecal Coliform in Blue Creek, Chewelah Creek, Colville River, Cottonwood Creek, Haller Creek, Huckleberry Creek, Jump-Off-Joe Creek, Little Pend Oreille River, Mill Creek, Sheep Creek, Sherwood Creek, Stensgar Creek, and Stranger Creek

High Temperature in Chewelah Creek, Colville River, Cottonwood Creek, and Stensgar Creek

Dissolved Oxygen in Blue Creek, Chewelah Creek, Colville River, Sheep Creek, and Stensgar Creek

pH in Chewelah Creek, Colville River, and Mill Creek

Nutrients in Colville River and Starvation Lake

Chlorine in Colville River

Flooding and Bank Hardening for Mill Creek and Little Pend Oreille River

Groundwater Quality

Nitrates – Levels detected > 10 mg/L

Pesticides – Have not been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

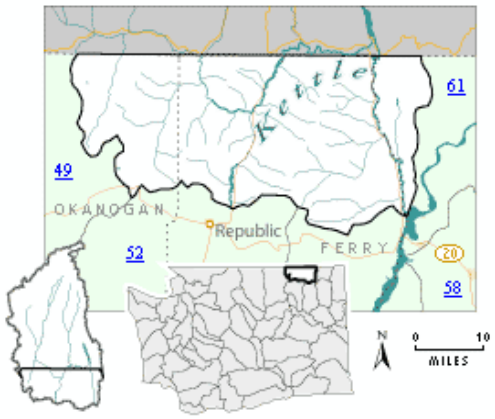
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #59

1. TMDL for Colville River
2. Mill Creek Watershed Implementation Plan, Stevens CD
3. Huckleberry Creek Watershed Analysis, DNR
4. Jump-Off-Joe Creek Implementation Plan, Stevens County CD
5. Restoring Colville River Watershed Health Program, Stevens CD
6. Huckleberry/Chewelah Creek Implementation Program, Stevens CD
7. Starvation Lake Water Quality Program
8. Northwest Alloys L-Bar Water Quality Monitoring Program, Stevens CD
9. Onsite Sewage Education Program, Northeast Tri-Counties Health
10. 2514 Planning, Stevens County
11. Lake Roosevelt Water Festival, Ferry CD, National Park Service, and US Forest Service

Kettle Basin - WRIA #60



WRIA #60 encompasses about 654,844 acres. The two ecoregions include the Northern Rockies and Columbia Basin. Average annual rainfall is 18 inches per year. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 8,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from acidic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Ferry (66%) Okanogan (24%)

Stevens (10%)

Primary Towns and Cities

Chesaw	Danville	Curlew
Malo	Laurier	Orient

Tribal Reservation Lands

None

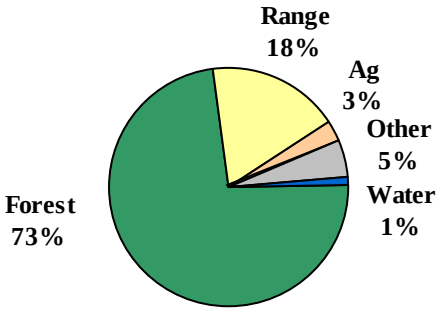
Special Purpose Districts

Ferry Conservation District

Okanogan Conservation District

Stevens County Conservation District

Land Use in the Kettle Basin



Land Base (in acres)

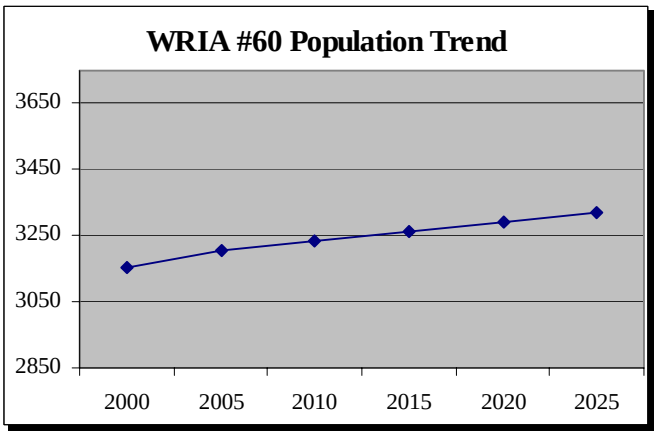
Federal	379,281	57.8%
State	48,183	7.3%
Local	0	0%
Tribal	0	0%
Private	228,670	34.9%

Principal Economic Activities (as total wages)

Manufacturing	12%
Retail Trade	13%
Services	14%
Government	39%
Agriculture/Forestry	3%

Population

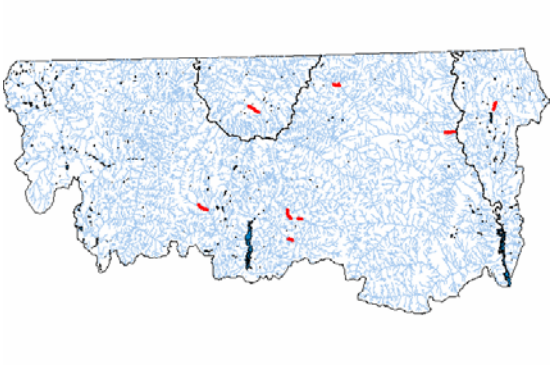
There are approximately 3,179 people living in the Kettle Basin. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #60

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

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Fecal Coliform in Cottonwood Creek, Lambert Creek, Lone Ranch Creek, Martin Creek, St. Peter Creek, and Trout Creek

pH in Pierre Creek

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

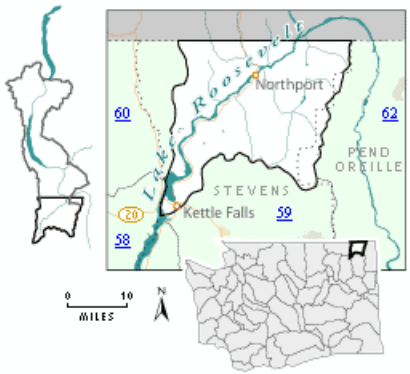
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #60

1. Watershed BMP Implementation Project, Ferry CD
2. Onsite Sewage Education Program, Northeast Tri-Counties Health
3. Kettle River Watershed Plan Phase I, Ferry County Planning Unit
4. Lake Roosevelt Water Festival, Ferry CD, National Park Service, and U.S. Forest Service

Upper Lake Roosevelt - WRIA #61



WRIA #61 encompasses about 370,061 acres in the northeast corner of the state. This watershed is part of the Northern Rockies ecoregion. Average annual rainfall is 24 inches per year. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 8,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from basic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass.

Counties

Stevens (94%) Pend Oreille (6%)

Primary Towns and Cities

Kettle Falls Northport Marcus

Tribal Reservation Lands

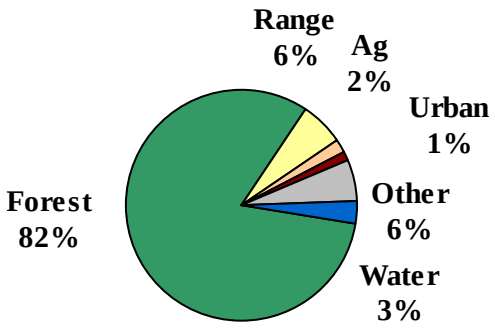
None

Special Purpose Districts

Stevens County Conservation District

Pend Oreille Conservation District

Land use in Upper Lake Roosevelt Basin



Land Base (in acres)

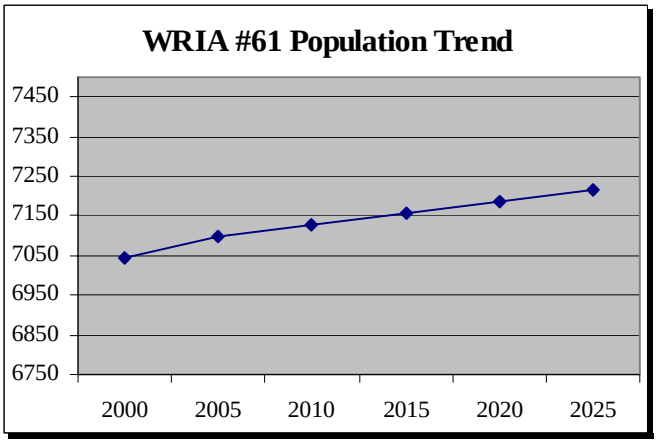
Federal	114,833	31.1%
State	34,699	9.4%
Local	0	0%
Tribal	0	0%
Private	219,212	59.5%

Principal Economic Activities (as total wages)

Agriculture/Forestry	2%
Manufacturing	21%
Retail Trade	17%
Services	24%
Government	25%
Other	11%

Population

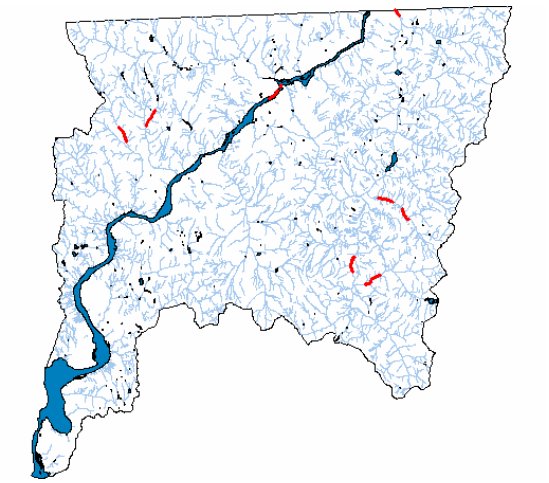
There are approximately 7,071 people living in the Upper Lake Roosevelt Basin. The primary population centers are Kettle Falls and Northport. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #61

Listed problem areas are highlighted (online).



For mapping updates see:

http://apps.ecy.wa.gov/wqawa/viewer.htm

1. 303(d) List of Impaired Water Bodies

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Fecal Coliform in Crown Creek, Flat Creek, Meadow Creek, and Smackout Creek

High Temperature in Deep Creek and Franklin D. Roosevelt Lake

Dissolved Oxygen in Franklin D. Roosevelt Lake

pH in Deep Creek and Smackout Creek

Sediment Bioassay in Franklin D. Roosevelt Lake

Total Dissolved Gas in Franklin D. Roosevelt Lake

Arsenic in Franklin D. Roosevelt Lake

Aquatic Nuisance Plants in Deep Lake

2. Impacted Designated Uses

Groundwater Quality

Nitrates - Levels not detected above 5 mg/L

Pesticides – Have not been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

All Anadromous Extinct; Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

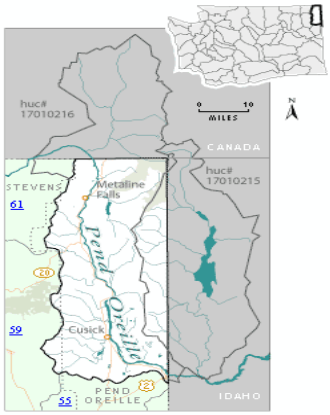
Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #61

1. Onion Creek Watershed Analysis, Boise Cascade
2. Big Sheep Creek Watershed Analysis, Boise Cascade
3. Lake Roosevelt Water Quality Council (inactive)
4. Pingston Creek Watershed Management Program, Stevens CD
5. Onsite Sewage Education Program, Northeast Tri-Counties Health
6. Lake Roosevelt Water Festival, Ferry CD, National Park Service, and US Forest Service
7. Onion Creek Watershed Planning, Stevens CD

Pend Oreille Basin - WRIA #62



WRIA #62 encompasses about 794,546 acres. This watershed is part of the Northern Rockies ecoregion. Rugged, high mountains are the dominant feature of this region. Elevations are generally 1,300 to 8,000 feet. Mountains have sharply-crested ridges and steep slopes cut by steep walled narrow stream valleys. Soils are derived from acidic rock. Potential natural vegetation includes western white pine, lodgepole pine, western red cedar, Douglas-fir, wheatgrass, fescue, and needlegrass. Average annual rainfall is 34 inches per year.

Counties

Pend Oreille	(97%)	Stevens	(3%)

Primary Towns and Cities

Newport	Ione	Metaline Falls
Metaline	Cusick	

Tribal Reservation Lands

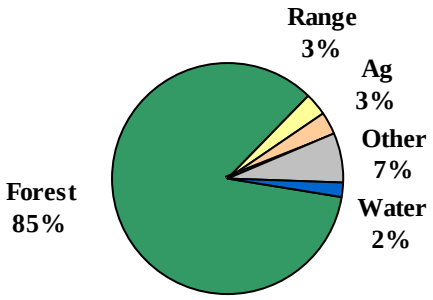
Kalispel Tribe

Special Purpose Districts

Pend Oreille Conservation District

Stevens County Conservation District

Land Use in Pend Oreille Basin



Land Base (in acres)

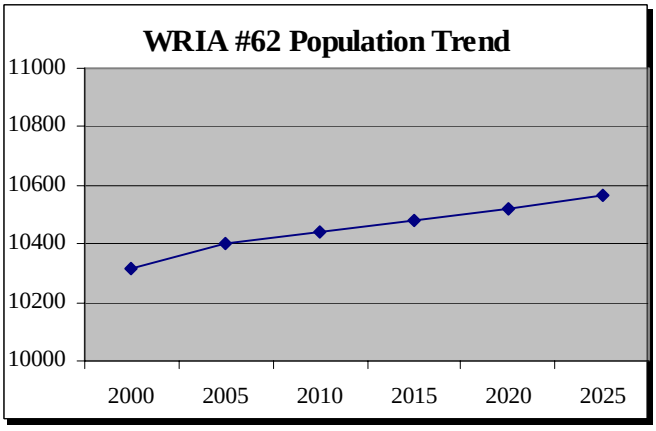
Federal	525,466	66.6%
State	27,898	3.5%
Local	0	0%
Tribal	4,740	0.6%
Private	231,431	29.3%

Principal Economic Activities (as total wages)

Agriculture/Forestry	1%
Manufacturing	16%
Retail Trade	16%
Services	15%
Government	43%
Other	8%

Population

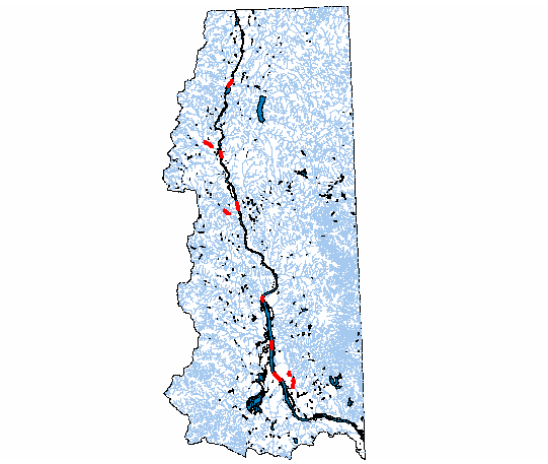
There are approximately 10,358 people living in the Pend Oreille Basin. The primary population centers are Newport and Ione. The majority of people live in unincorporated areas.



Surface Water Quality

Water Quality Assessment Map WRIA #62

Listed problem areas are highlighted (online).



For mapping updates see:

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1. 303(d) List of Impaired Water Bodies

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Fecal Coliform in Skookum Creek

High temperature in Cedar Creek, Lost Creek, and Pend Oreille River

pH in Pend Oreille River

Sedimentation of bull trout and west slope cutthroat habitat.

Exotic Aquatic Plants in Pend Oreille River

Milfoil in Diamond Lake

Bank sloughing and hardening along Pend Oreille River

2. Impacted Designated Uses

Groundwater Quality

Nitrates – Levels not detected above 5 mg/L

Pesticides – Have been detected in public wells.

Sole Source Aquifer

None

Water Quantity

No concerns

Salmonid Stock Status

Resident Healthy

Air Quality (from windblown dust)

No concerns

Public Health
Commercial Shellfish Growing Areas

None

Domestic Water Supply

No significant use of surface water sources

3. Water Quality Plans and Implementation Efforts for WRIA #62

1. Water quality studies in Box Canyon Reservoir - Pend Oreille PUD
2. Phase II Restoration in Lake Sacheen
3. Tri-State Council Monitoring and Implementation in the Pend Oreille
4. TFW Watershed Analysis in LeClerc Creek
5. Pend Oreille Watershed Planning, Pend Oreille CD
6. 2514 Watershed Planning
7. Pend Oreille Water Festival, Pend Oreille CD
8. DOE POWR Grant Program, Pend Oreille CD
9. Salmon Recovery Program, Pend Oreille CD
10. West Branch Priest TMDL, Idaho DEQ